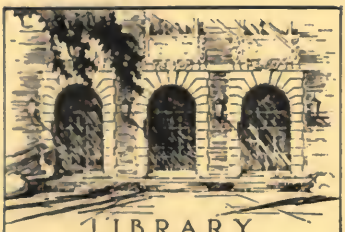
SHOUT
SHARE
IT



LIBRARY
OF THE
UNIVERSITY
OF ILLINOIS

580.5
EB
v. 8, cop. 5

FIELD MUSEUM OF NATURAL HISTORY
FOUNDED BY MARSHALL FIELD, 1893

PUBLICATION 284

BOTANICAL SERIES VOL. VIII, No. 4

THE CYPERACEAE OF CENTRAL AMERICA

BY

PAUL C. STANDLEY

ASSOCIATE CURATOR OF THE HERBARIUM, DEPARTMENT OF BOTANY

B. E. DAHLGREN

ACTING CURATOR, DEPARTMENT OF BOTANY

EDITOR

CHICAGO, U. S. A.

JANUARY 26, 1931

PRINTED IN THE UNITED STATES OF AMERICA
BY FIELD MUSEUM PRESS

THE CYPERACEAE OF CENTRAL AMERICA

PAUL C. STANDLEY

More than ten years ago the writer prepared an account of the sedges of the family Cyperaceae occurring in Central America. Since its compilation the manuscript has been used frequently in the determination of current collections. The keys have been found to be as satisfactory, or as unsatisfactory, as keys usually are in this family, and the descriptions and locality data have proved helpful in making determinations. Therefore it seems worth while to publish the account, which, however, does not pretend to be of a monographic nature.

The 159 Cyperaceae listed here constitute one of the larger families of Central American plants. They are of but slight economic importance, except that some with soft, spongy, and tough stems are utilized generally in this region for weaving the thick mats or pads that serve as mattresses upon the painfully hard Central American beds. Some of the plants doubtless are eaten by stock, with the coarse grasses that accompany them. Several of the sedges are abundant weeds in cultivated ground. Perhaps the majority of the species are inhabitants of cultivated ground or of second-growth thickets, but some are found only in virgin forest or in the delightful meadows of the high mountains, and several others never are seen elsewhere than along the sea beaches or in salt meadows.

The preliminary draft of this paper was prepared before the writer visited Central America. It is a remarkable fact that his own collections, amounting to about 40,000 numbers, and the very extensive series gathered in Central America during the past ten years by other collectors, have added less than ten species to the list of Cyperaceae originally prepared. Evidently most of the species of the area have been collected. Certainly there are many other groups of plants in which the same condition does not prevail, for recent explorations have added hundreds of species, many genera, and even several families to the known Central American flora.

In the Botany of the *Biologia Centrali-Americana* Hemsley listed the Cyperaceae known fifty years ago from Central America. In 1908 C. B. Clarke published (Contr. U. S. Nat. Herb. 10: 443–471) an account of the Costa Rican species of the family. These are the

most important publications dealing with the group as it is represented in the area under consideration.

The writer is indebted to Dr. N. L. Britton, who has given advice regarding certain parts of the present paper, and to Kenneth K. Mackenzie, who has furnished the account of the genus *Carex*.

CYPERACEAE. Sedge Family

Annual or perennial, grasslike or rushlike herbs; stems (culms) solid, triangular, quadrangular, terete, or compressed; leaves narrow, usually with closed sheaths; flowers perfect or unisexual, arranged in spikelets, one in the axil of each scale, the spikelets 1- to many-flowered; scales 2-ranked or spirally imbricate, persistent or deciduous; perianth of bristles or scales, or often absent; stamens 1–3; anthers 2-celled; style 2–3-cleft, rarely simple; fruit an achene.

Flowers partly (the fertile ones) perfect.

Scales of the spikelets 2-ranked; perianth none.

Spikelets with only one perfect flower; spikelets capitate. 1. *Kyllinga.*

Spikelets usually with 2 or more perfect flowers; spikelets variously arranged.....2. *Cyperus.*

Scales spirally imbricate; perianth of bristles often present.

Empty scales at base of the spikelet 1 or 2 or more.

Base of the style persistent upon the achene as a tubercle.

Spikelet one; leaves reduced to sheaths; perianth of bristles usually present.....3. *Eleocharis.*

Spikelets more than one; leaves present; perianth none. 4. *Stenophyllus.*

Base of the style not persistent.

Flowers without inner scales.

Base of the style swollen; bristles none...5. *Fimbristylis.*

Base of the style not swollen; bristles present..6. *Scirpus.*

Flowers with one or more inner scales.

Flowers with 3 broad stipitate scales alternating with bristles.....7. *Fuirena.*

Flowers with 1 or 2 hyaline scales and no bristles.

Inner scales (2) complicate and connate..8. *Ascolepis.*

Inner scales not complicate, free.

Inner scales 2, convolute.....9. *Lipocarpha.*

Inner scale 1, minute .....10. *Hemicarpha.*

Empty scales at the base of the spikelet 3 or more.

Style 3-cleft.

Fertile flower axillary; plants large.....11. *Mariscus.*

Fertile flower pseudo-terminal; plants small..12. *Remirea.*

Style 2-cleft.

Spikelets compressed, clustered in a single head; bristles none.....13. *Dichromena.*

Spikelets not compressed, usually paniculate or corymbose; bristles usually present.....14. *Rynchospora.*

Flowers all unisexual.

Pistillate flower enclosed in a utricle.

Utricle enclosing a long uncinate bristle.....20. *Uncinia.*

Utricle enclosing only the pistil.....21. *Carex.*

Pistillate flowers not enclosed in a utricle.

Fertile flowers in each spikelet often more than one, each subtended by a scale, lateral.

Fertile flower basal.....15. *Scleria.*

Fertile flower terminal.....16. *Calyptrocarya.*

Fertile flower in each spikelet one, naked, terminal.

Spikelets in umbellate or paniculate spikes.

Spikes of spikelets about 5 mm. long; flowers 3 in each spikelet.....17. *Hypolytrum.*

Spikes 15–30 mm. long; flowers 6–9 in each spikelet. 18. *Diplasia.*

Spikelets crowded in dense heads of spikes.....19. *Mapania.*

1. KYLLINGA Rottb.

Plants annual or perennial, glabrous or nearly so; culms triangular, leafy below, the leaves sometimes reduced to sheaths; inflorescence terminal, consisting of 1–3 more or less confluent heads, the heads usually involucrate; spikelets composed of 3–4 scales, only the middle one fertile, the scales 2-ranked, keeled; perianth none; stamens 1–3; style bifid; achene lenticular.—About 45 species, widely distributed in temperate and tropical regions.

Head of spikelets not involucrate.....1. *K. nudiceps.*

Head of spikelets subtended by involucre of one or more leaflike bracts.

Plants annual or biennial; rootstocks very short or none, the culms cespitose.

Fertile scale scabrous-ciliate on the keel, eglandular. 2. *K. pumila.*

Fertile scale smooth on the keel, bearing scattered red glands. 3. *K. odorata.*

Plants perennial, usually with stout elongate rootstocks, the culms not cespitose.

Leaf blades absent, the sheaths scarious, colored. 4. *K. peruviana.*

Leaf blades present, the sheaths scarcely scarious, not colored.

Leaves abruptly narrowed, much shorter than the stout culms. 5. *K. pungens.*

Leaves long-attenuate, nearly equaling the slender culms. 6. *K. brevifolia.*

1. **Kyllinga nudiceps** Clarke ex Standl. Field Mus. Bot. 4: 199. 1929.

Cocos Island, Costa Rica; endemic; type, *Pittier 16272.*

Plants erect, with short, horizontal or ascending rhizomes; culms slender, 20–50 cm. long, less than 1 mm. thick, striate, glabrous; leaves all reduced to sheaths, these purplish, 7 mm. long or less; head solitary, naked, subglobose, 5–6 mm. broad; fertile scale navicular, ovate, acute, brown-dotted, the keel smooth.

2. **Kyllinga pumila** Michx. Fl. Bor. Amer. 1: 28. 1803. *K. caespitosa* Nees in Mart. Fl. Bras. 2^1: 12. 1842.

Guatemala; Honduras; Salvador; Nicaragua; Costa Rica; Panama; in moist soil, often a weed in cultivated ground, ranging from sea level to 1,800 m. Widely distributed in North and South America; also in Africa.

Plants annual, cespitose, 5–40 cm. high, the culms slender; leaf blades well developed, usually shorter than the culm, 2–3 mm. wide; heads 1–3, ovoid or cylindric, 5–10 mm. long; bracts 3–4, 8 cm. long or less.

3. **Kyllinga odorata** Vahl, Enum. Pl. 2: 382. 1806.

Guatemala; Honduras; Costa Rica; Panama; in wet soil, ranging from sea level to 1,500 m. Southern United States and Mexico; West Indies and South America.

Plants annual or biennial, cespitose, the culms 10–40 cm. long, slender; leaves shorter than the culms, 2–4 mm. wide; heads 1–3, ovoid or cylindric, 15 mm. long or less; bracts 3–4, 8 cm. long or shorter.

4. **Kyllinga peruviana** Lam. Encycl. 3: 366. 1789. *K. vaginata* Lam. Ill. Gen. 1: 148. 1791. *Mariscus aphyllus* Vahl, Enum. Pl. 2: 373. 1806. *K. aphylla* Kunth, Enum. Pl. 2: 127. 1837.

British Honduras; Guatemala; Honduras; Nicaragua (according to Hemsley); Costa Rica; Panama; in wet soil along the coast, usually growing in beach sand. West Indies, South America, and tropical America generally.

Leaves all reduced to loose sheaths; culms stout, 20–50 cm. high; bracts usually shorter than the head; head one, 1 cm. or less in diameter.

5. **Kyllinga pungens** Link, Hort. Berol. 1: 326. 1827.

Guatemala; Honduras; Salvador; Costa Rica; Panama; in wet soil on or near sea beaches. Porto Rico; South America; Africa and Asia.

Lower leaves reduced to loose sheaths, the upper ones bearing short blades about 4 mm. wide; culms 10–40 cm. high, stout, the bracts 1–6 cm. long; head one, globose, 6–9 mm. in diameter.

6. **Kyllinga brevifolia** Rottb. Descr. & Icon. 13. *pl. 4, f. 3.* 1773.

Guatemala; Honduras; Salvador; Panama; in wet soil, ranging from sea level to 2,400 m. Widely distributed in the warmer regions of both hemispheres.

Rhizomes often much elongate; leaves 2–4 mm. wide; culms 10–40 cm. long, slender; bracts 3–4, 12 cm. long or less; heads 1–3, ovoid or short-cylindric, 7–12 mm. long; scales usually scabrous along the keel.

2. CYPERUS L.

Annuals or perennials, the culms simple, usually triangular and leafy; inflorescence involucrate, capitate or umbellate; spikelets flat or subterete, few- or many-flowered, the rachis often winged, the scales concave, conduplicate or carinate, 2-ranked; flowers perfect; perianth none; stamens 1–3; style 2–3-cleft; achene lenticular or 3-angulate.—About 600 species, in tropical and temperate regions.

Style 2-cleft.

Surface of the achene transversely undulate-lineate, the cells longitudinally oblong.....1. *C. flavescens.*

Surface of the achene not transversely undulate, the cells quadrate.

Spikelets about 5 mm. wide.....2. *C. unioloides.*

Spikelets 1.5–3 mm. wide.

Spikelets yellowish or greenish.

Spikelets about 1.5 mm. wide.

Spikelets densely spicate, ascending, the scales closely appressed.....3. *C. odoratus.*

Spikelets laxly spicate, spreading, the scales not appressed.

Scales acute; plants perennial.....4. *C. paniculatus.*

Scales obtuse; plants annual.....5. *C. fugax.*

Spikelets 2–3 mm. wide.

Clusters of spikelets crowded into a single head.
6. *C. Olfersianus.*

Clusters of spikelets umbellate.....7. *C. Humboldtianus.*

Spikelets chestnut-brown or spotted with chestnut.

Plants perennial; spikelets in dense headlike spikes. 8. *C. melanostachyus.*

Plants annual; spikelets in loose spikes.....9. *C. lagunetto.*

Style 3-cleft.

A. Rachilla of the spikelet deciduous.

Rachilla breaking up into 1-fruited joints.

Spikelets about 3 mm. thick.....10. *C. Hayesii.*

Spikelets 1–1.5 mm. thick.

Spikelets loosely spicate.....11. *C. ferax.*

Spikelets crowded into a few dense heads. 12. *C. oxycarioides.*

Rachilla not breaking up into joints.

Spikelets usually containing 5–10 nutlets.

Spikelets brown or reddish.

Leaves 5–6 mm. wide.....13. *C. brunneus.*

Leaves 15–20 mm. wide.....14. *C. saturatus.*

Spikelets yellowish or greenish.

Spikelets crowded in a dense head.....15. *C. divergens.*

Spikelets loosely spicate.

Spikelets stout, 1.5–2 mm. thick..16. *C. panamensis.*

Spikelets almost filiform.....17. *C. caracasanus.*

Spikelets containing 1–4 nutlets.

Spikes of the rays digitately compound.

Spikes 8 mm. or less in diameter, comparatively lax. 18. *C. incompletus.*

Spikes more than 10 mm. in diameter, very dense. 19. *C. ligularis.*

Spikes of the ray simple.

Spikelets crowded into a dense rounded head. 15. *C. divergens.*

Spikelets in umbellate spikes.

Spikelets containing a single achene....20. *C. Haenkei.*

Spikelets containing 2 or more achenes.

Spikes very short, headlike.....21. *C. globulosus.*

Spikes elongate, cylindric.

Lowest empty scale much shorter than the upper ones.....22. *C. cyperoides.*

Lowest empty scale equaling or exceeding the others.

Spikes very dense, the spikelets ascending, turgid.....23. *C. cayennensis.*

Spikes lax, the spikelets divaricate, not turgid.

Spikes digitate.....24. *C. hermaphroditus.*

Spikes subumbellate.....25. *C. Meyenianus.*

AA. Rachilla of the spikelet persistent.

B. Spikelets spicate.

Stamens persistent, elongate in age.....26. *C. prolixus.*

Stamens deciduous, not elongate in age.

Culms terete or nearly so, naked.

Culms septate; bracts scalelike.....27. *C. articulatus.*

Culms not septate; bracts long, leaflike.28. *C. giganteus.*

Culms 3-angled, leafy, at least below.

Spikelets purple or castaneous.....29. *C. rotundus.*

Spikelets green, yellow, or yellow-brown.

Spikelets 5–8 mm. long.

Spikelets 12–20-flowered.....30. *C. radiatus.*

Spikelets mostly 3–5-flowered.....31. *C. spectabilis.*

Spikelets 10–20 mm. long or longer.

Scales acute or acuminate.....32. *C. compressus.*

Scales obtuse.

Spikelets about 1 mm. wide.....33. *C. distans.*

Spikelets 1.5–2 mm. wide.

Rachilla winged; plants perennial.
34. *C. esculentus.*

Rachilla not winged; plants annual.
35. *C. sphacelatus.*

BB. Spikelets digitate or capitate.

Spikelets crowded in a single dense head.

Scales obtuse, white.....36. *C. tenerrimus.*

Scales acute, green.....37. *C. humilis.*

Spikelets not in a single head.

Plants annual.

Scales green.....32. *C. compressus.*

Scales brown or reddish.....38. *C. uncinatus.*

Plants perennial.

Culms leafless.....39. *C. canus.*

Culms leafy below.

Spikelets mostly ovate, the scales usually obtuse.

Leaves appearing lineolate because of the transverse septa.....40. *C. virens.*

Leaves not transverse-septate.

Spikelets ovate.

Spikelets in very dense, subglobose heads. 41. *C. Luzulae.*

Spikelets in loose heads....42. *C. surinamensis.*

Spikelets linear-oblong or oblong-lanceolate. 43. *C. ochraceus.*

Spikelets linear or oblong, several times as long as broad, the scales acute or acuminate.

Stamen 1; culm shorter than the rays of the umbel. 44. *C. simplex.*

Stamens 2–3; culms longer than the rays of the umbel.

Spikelets 1–2 mm. wide.

Scales closely appressed and imbricate. 45. *C. haspan.*

Scales loose, distant.....46. *C. chorisanthus.*

Spikelets 2–3 mm. wide.

Spikelets green.

Leaves flat.....47. *C. diffusus.*

Leaves convolute.....48. *C. elegans.*

Spikelets vinaceous.....49. *C. nubigenus.*

1. **Cyperus flavescens** L. Sp. Pl. 46. 1753. *Pycreus flavescens* Beauv. ex Reichenb. Fl. Excurs. 1: 72. 1830–32. *?C. squalidus* Liebm. Dansk. Vid. Selsk. Skrivt. V. 2: 199. 1851. *C. Durandii* Boeckl. Allgem. Bot. Zeitschr. 1: 185. 1895. *C. Tonduzianus* Boeckl. op. cit. 187. 1895.

Honduras; Nicaragua; Costa Rica; Panama; in fields or moist soil, sometimes growing in pine forest, ranging from sea level to 1,400 m. Tropical and temperate regions of both hemispheres.

Plants annual, the culms tufted, very slender, 2–30 cm. long; leaves 1–2 mm. wide; bracts longer than the umbel; spikelets 5–20

mm. long, 2–3 mm. wide, yellowish, digitate or short-spicate; scales obtuse, closely appressed; achene obovoid, blackish.

Cyperus squalidus and *C. Durandii* were described from San José, Costa Rica, and *C. Tonduzianus* from Costa Rica.

2. **Cyperus unioloides** R. Br. Prodr. Fl. Nov. Holl. 216. 1810. *C. bromoides* Link, Jahrb. 3: 85. 1820. *Pycreus angulatus* Nees, Linnaea 9: 283. 1834.

Guatemala; Nicaragua; Costa Rica; Panama; in swamps, at about 1,300 m., and probably also at lower elevations. Mexico; Cuba and Hispaniola; South America; Asia, Africa, and Australia.

Plants with elongate rhizomes; culms slender, 30–100 cm. high; leaves 2–5 mm. wide; bracts long and leaflike; spikelets 10–15 mm. long, yellowish, short-spicate and umbellate or in a single dense cluster; scales acute, closely appressed; achene obovoid, compressed, black, smooth.

3. **Cyperus odoratus** L. Sp. Pl. 46. 1753. *Pycreus polystachyus* Beauv. Fl. Owar. 2: 48. *pl. 86, f. 2.* 1807. *C. polystachyus* R. Br. Prodr. Fl. Nov. Holl. 214. 1810. *P. odoratus* Urban, Symb. Antill. 2: 164. 1900.

Panama; growing in ditches near sea level. Tropical regions of both hemispheres.

Plants usually with fibrous roots, the culms 20–80 cm. high; leaves 2–5 mm. wide; spikelets spicate, 1–2 cm. long, stramineous, the scales acutish; achene oblong, compressed, blackish.

4. **Cyperus paniculatus** Rottb. Descr. & Icon. 40. 1773.

Guatemala; Honduras; Salvador; Panama; at 900 m. or less, in moist fields or on sandy flats. Mexico, Cuba, Jamaica, and South America; also in the Old World.

Plants annual, the culms very slender, tufted, 2–15 cm. high; leaves 1–1.5 mm. wide; spikelets in short lax umbellate spikes, linear, 5–12 mm. long, the scales very obtuse, green or brownish; bracts long and leaflike; achenes obovoid-oblong, blackish.

Called "pelillo" in Salvador.

5. **Cyperus fugax** Liebm. Dansk. Vid. Selsk. Skrivt. V. 2: 196. 1851.

Salvador; Costa Rica; in sand at low elevations. Mexico; Jamaica.

A small tufted annual about 5 cm. high; leaves narrowly linear; umbel few-rayed, the rays very short, the few spikelets spreading, in short lax spikes; bracts longer than the umbel; spikelets linear, 6–12 mm. long, greenish, 10–18-flowered, the scales obliquely spreading, apiculate; achene compressed, obovate, castaneous, obtuse and apiculate, obscurely puncticulate.

6. **Cyperus Olfersianus** Kunth, Enum. Pl. 2: 10. 1837. *Pycreus propinquus* Nees in Mart. Fl. Bras. 2[1]: 7. 1842.

Salvador; Costa Rica; Panama; in wet soil. Mexico, West Indies, and South America; Africa.

Plants with slender rhizomes, the culms slender, tufted, 20–80 cm. long; leaves 1–3 mm. wide; bracts about 3, 15 cm. long or less; spikelets in a single head, 1–2 cm. long, yellowish, linear, the scales obtuse; achene obovoid, smooth, castaneous.

7. **Cyperus Humboldtianus** Schult. in R. & S. Syst. Veg. 2: Mant. 100. 1824. *C. densus* Link, Jahrb. 3: 83. 1820, non R. Br. 1814. *C. helvus* Liebm. Dansk. Vid. Selsk. Skrivt. V. 2: 197. 1851. *Pycreus helvus* Clarke in Urban, Symb. Antill. 2: 164. 1900. *P. densus* Urban, Symb. Antill. 2: 164. 1900.

Guatemala; Salvador; Costa Rica; in wet soil, at 1,350 m. or less.

Plants perennial, with rhizomes; leaves 2–3 mm. wide; bracts long and leaflike; spikes short and dense, headlike, umbellate; spikelets 4–20-flowered, 1 cm. long or less, the scales obtuse; achene smooth, brown or castaneous.

8. **Cyperus melanostachyus** HBK. Nov. Gen. & Sp. 1: 207. 1815. *C. variegetus* HBK. op. cit. 208. 1815. *C. cimicinus* Presl, Rel. Haenk. 1: 166. 1830. *C. elegantulus* Steud. Flora 25: 583. 1842. *C. diandrus* var. *capitatus* Britton, Bull. Torrey Club 13: 205. 1886. *Pycreus elegantulus* Clarke in Dur. & Schinz, Fl. Afr. 5: 536. 1895. *P. melanostachyus* Clarke, Contr. U. S. Nat. Herb. 10: 446. 1908. *P. melanostachyus* var. *variegatus* Clarke, loc. cit.

Guatemala; Nicaragua; Costa Rica; in moist soil, on wet banks or in pastures, at 300–2,560 m. Southern California and Mexico; South America.

Plants with rhizomes, the culms slender, 10–40 cm. high; leaves 1–2 mm. wide; bracts long and leaflike; spikelets 1 cm. long or less, 2–3 mm. wide, often nearly black, the scales usually closely appressed; achene ellipsoid, castaneous.

Clarke maintained *C. cimicinus* (*C. elegantulus*) as a distinct species, separated by its narrower spikelets, but it does not appear practicable to separate the two forms satisfactorily. The plant is very common in the moist or wet, high mountain pastures of Costa Rica, where it is noticeable because of the dark color of its spikelets.

9. **Cyperus lagunetto** Steud. Syn. Pl. Glum. 2: 5. 1855. *Pycreus lagunetto* Clarke, Contr. U. S. Nat. Herb. 10: 446. 1908.

Guatemala; Costa Rica; in wet soil, often on moist open banks, at 1,000–1,300 m. South America.

Culms densely tufted, 15 cm. high or less; leaves 1–2 mm. wide; umbels very lax, the spikelets usually few, 6–15 mm. long, nearly 3 mm. wide, strongly compressed, the scales obtuse; achene obovoid, smooth, blackish.

10. **Cyperus Hayesii** (Clarke) Standl. Journ. Washington Acad. Sci. 15: 457. 1925. *Torulinium Hayesii* Clarke, Kew Bull. Add. Ser. 8: 20. 1908.

Described from Panama.

Rhizome none; culms 30–60 cm. high; leaves 5–7 mm. wide; spikes 3 cm. long or less, lax, simply umbellate, the spikelets linear, 15 mm. long, containing about 14 achenes, the scales imbricate or obliquely spreading, 3–4 mm. long; achene 2 mm. long, black.

11. **Cyperus ferax** L. Rich. Act. Soc. Hist. Nat. Paris 1: 105. 1792. *Torulinium confertum* Hamilt. Prodr. Ind. Occ. 15. 1825. *Mariscus Pohlianus* Nees in Mart. Fl. Bras. 2[1]: 50. 1842. *C. granadinus* Liebm. Vid. Selsk. Skrivt. V. 2: 224. 1851. *C. laetus* var. *obtusiflorus* Boeckl. Allgem. Bot. Zeitschr. 2: 2. 1896.

British Honduras; Guatemala; Honduras; Salvador; Nicaragua; Costa Rica; Panama; in moist or wet soil, often a weed in cultivated ground, at 1,400 m. or less. Generally distributed in tropical and subtropical regions.

Plants perennial, the culms stout, 15–80 cm. high; leaves 5–7 mm. wide, shorter than the culms; bracts large and leaflike; umbel compound, the spikelets loosely spicate, linear, subterete, 10–15 mm. long or even larger, yellow or brownish, the scales 2 mm. long, striate; rachilla winged; achene black, oblong.

Cyperus granadinus was described from Granada, Nicaragua. *C. Oerstedii* Liebm. (Dansk. Vid. Selsk. Skrivt. V. 2: 224. 1851), described from Segovia, Nicaragua, is referred by Clarke to *C. Vahlii* (Nees) Steud., which probably is not distinct from *C. ferax*.

This species is one of the most abundant weeds of Central America, and may be seen almost anywhere at middle and lower elevations, except in virgin forest. The plant is a very variable one. In Salvador it is known by the names "coyolillo" and "zacate de corona," and in Panama as "junco."

12. **Cyperus oxycarioides** Britton, Bull. Torrey Club 11: 86. 1884.

Guatemala (Boca de Polochic, at 60 m.); Honduras (Tela, at sea level). Also in Texas.

Plants annual (?), the culms 50–100 cm. high; leaves 3–8 mm. wide; bracts long and leaflike; spikes very dense and congested, mostly sessile, the spikelets linear, subterete, 6–10 mm. long, 8–12-flowered, the scales 2 mm. long, obtuse, striate; achenes oblong-obovoid, 1.5 mm. long, brown.

13. **Cyperus brunneus** Sw. Fl. Ind. Occ. 1: 116. 1797.

Honduras (Holbox Island). Florida and the West Indies.

Plants with horizontal rhizomes, the culms 10–60 cm. high; leaves often longer than the culms; bracts long and leaflike; umbels few-

rayed, the spikes short and dense, often sessile; spikelets 1 cm. long or less, 2–3 mm. wide, brown, 5–8-flowered, the scales obtuse; achene obovoid, 3-angulate.

14. **Cyperus saturatus** Clarke, Bot. Jahrb. Engler 37: 517. 1906. *Mariscus saturatus* Donn. Smith ex Clarke, Contr. U. S. Nat. Herb. 10: 453. 1908.

Costa Rica, at 250–650 m.; type from Jiménez, Llanos de Santa Clara, on the Atlantic slope.

Plants perennial, stout, the culms about 60 cm. high; leaves large, 3-nerved; bracts long and leaflike; umbel compound, rather dense, the spikelets in clusters of 3–8, reddish brown, 12–20-flowered, 10–15 mm. long and nearly 3 mm. wide, compressed, the scales acute; achene ellipsoid, dark brown.

15. **Cyperus divergens** HBK. Nov. Gen. & Sp. 1: 208. 1815. *C. manimae* HBK. op. cit. 209. 1815. *C. triceps* Nees, Linnaea 19: 697. 1847. *C. asperrimus* Liebm. Dansk. Vid. Selsk. Skrivt. V. 2: 30. 1851. *C. apiculatus* Liebm. op. cit. 32. 1851. *Mariscus manimae* Clarke, Contr. U. S. Nat. Herb. 10: 452. 1908. *M. manimae* var. *divergens* Clarke, loc. cit. 1908.

Guatemala; Costa Rica; at 750–1,400 m. Mexico; South America.

Plants slender, with short thick rhizomes, the culms 20–50 cm. high; leaves about 1 mm. wide; bracts leaflike; spikes very dense, usually crowded in a dense head, sometimes pedunculate, yellow-green; spikelets 3–7-flowered, the scales obtuse, finally spreading; achene ellipsoid, trigonous, blackish.

Mariscus guatemalensis Clarke (Kew Bull. Add. Ser. 8: 16. 1908, non *C. guatemalensis* Steud. 1855), described from Guatemala, is, according to Clarke, perhaps a synonym of this. It is said to have chestnut-red scales, and is probably the same as *C. Hartwegianus* Britton, which, apparently, is the plant called by Clarke (Contr. U. S. Nat. Herb. 10: 452. 1908) *Mariscus manimae* var. *Hartwegianus*.

16. **Cyperus panamensis** (Clarke) Britton ex Standl. Journ. Washington Acad. Sci. 15: 457. 1925. *Mariscus panamensis* Clarke, Kew Bull. Add. Ser. 8: 15. 1908.

Guatemala; Salvador; Panama; at 300 m. or less; type from Panama. Also in Colombia.

Plants perennial, the culms stout, 20–50 cm. high; leaves 3–5 mm. wide; bracts large and leaflike; spikes dense, short-cylindric, simply umbellate, the spikelets yellowish, 3–5-flowered, 1 cm. long or less, the scales obtuse; achene oblong, trigonous.

Called "coyolillo" in Salvador.

17. **Cyperus caracasanus** Kunth, Enum. Pl. 2: 86. 1837. *Mariscus flabelliformis* HBK. Nov. Gen. & Sp. 1: 215. 1815, non *C.*

flabelliformis Rottb. 1773. *C. breviradiatus* Liebm. Dansk. Vid. Selsk. Skrivt. V. 2: 26. 1851. *C. Hartii* Boeckl. Cyp. Nov. 1: 9. 1888.

Guatemala; Honduras; Salvador; Costa Rica; Panama; in moist or wet soil, at 2,400 m. or less. Mexico, West Indies, and South America; Africa and Asia.

Plants with short thick rhizomes, the culms 20–50 cm. high; leaves 1.5–3 mm. wide; bracts long and leaflike; spikes simply umbellate, dense, the spikelets greenish or yellowish, about 7 mm. long, 3–8-flowered, the scales obtuse, striate; achene linear-oblong.

The names applied to the plant in Central America are "coyolillo" in Salvador and "junco" in Panama. The name "mulinillo" is reported from Mexico.

18. **Cyperus incompletus** (Jacq.) Link, Hort. Berol. 1: 319. 1827. *Kyllinga incompleta* Jacq. Coll. Bot. 4: 101. 1790. *Mariscus Mutisii* HBK. Nov. Gen. & Sp. 1: 216. *pl. 66.* 1815. *C. Mutisii* Griseb. Fl. Brit. W. Ind. 567. 1864. *C. Ehrenbergianus* Boeckl. Linnaea 36: 391. 1869–70. *C. Randuzii* (*Tonduzii*) Boeckl. Allgem. Bot. Zeitschr. 2: 17. 1896. *M. Ehrenbergianus* Clarke, Contr. U. S. Nat. Herb. 10: 452. 1908.

Guatemala; Salvador; Nicaragua; Costa Rica; Panama; in moist or wet soil at 1,300 m. or less. Widely distributed in tropical America.

Plants perennial, with short rhizomes, the culms 30–100 cm. high; leaves 4–8 mm. wide; bracts long and leaflike; spikes in compound umbels, dense, cylindric, the spikelets 3–5 mm. long, 1–3-flowered, divaricate, green, the scales obtuse or acutish, closely appressed; achene oblong or ellipsoid, trigonous, yellow-brown.

Cyperus Randuzii was described from San José, Costa Rica. The name "jacintillo zacate" is reported for this species from Costa Rica, and "coquillo" from Mexico.

19. **Cyperus ligularis** L. Amoen. Acad. 5: 391. 1759. *Mariscus rufus* HBK. Nov. Gen. & Sp. 1: 216. *pl. 67.* 1815.

Guatemala; Honduras; Salvador; Costa Rica; Panama; in moist soil at or near sea level. Generally distributed in tropical America.

Plants coarse and stout, with very short or no rhizomes, often forming dense clumps, the culms as much as 1 m. high; leaves 5–10 mm. wide, thick, usually transverse-lineolate; bracts long and leaflike; spikes in compound umbels, short and very dense, the spikelets 5 mm. long or less, red-brown, the scales obtuse, striate, closely appressed; achene narrowly obovoid, triquetrous, castaneous.

Called "cortadera" in Panama and "tul coyolillo" in Guatemala.

20. **Cyperus Haenkei** Presl, Rel. Haenk. 1: 181. 1830. *C. Pittieri* Boeckl. Allgem. Bot. Zeitschr. 2: 19. 1896.

Costa Rica; at sea level. California and Mexico.

Plants perennial, the leaves narrow; spikes short, mostly sessile, the spikelets crowded, linear-oblong, brownish, 3 mm. long, the scales acutish, striate; rachilla winged; achene linear-oblong.

Cyperus Pittieri was described from Costa Rica.

21. **Cyperus globulosus** Aubl. Pl. Guian. 1: 47. 1775. *Mariscus echinatus* Ell. Bot. S. C. & Ga. 1: 75. 1816.

Panama; on rocks at sea level. United States, West Indies, and South America.

Plants slender, with short rhizomes, the culms 15–50 cm. long; leaves 2–4 mm. wide; bracts elongate and leaflike; spikes subglobose, simply umbellate or crowded in a small head, the spikelets 5–6 mm. long, crowded, greenish, 3–5-flowered; achene narrowly obovoid, trigonous, blackish.

22. **Cyperus cyperoides** (L.) Britton, Bull. Dept. Agr. Jamaica 5: Suppl. 1: 8. 1907. *Scirpus cyperoides* L. Mant. Pl. 181. 1771. *Mariscus Sieberianus* Nees, Linnaea 9: 286. 1834. *M. Sieberianus* var. *evolutior* Clarke in Hook. f. Fl. Brit. Ind. 6: 622. 1894.

Guatemala; Honduras; Salvador; Costa Rica; at about 900 m. West Indies; Old World.

Plants perennial, the rhizomes short or none, the culms 20–80 cm. high; leaves 3–6 mm. wide; bracts long and leaflike; spikes simply umbellate, sometimes sessile, very dense, the spikelets 1–3-flowered, green or yellowish, the scales obtuse; achene oblong, trigonous, blackish.

23. **Cyperus cayennensis** (Lam.) Britton, Bull. Dept. Agr. Jamaica 5: Suppl. 1: 8. 1907. *Kyllinga cayennensis* Lam. Ill. 1: 149. 1791. *Mariscus flavus* Vahl, Enum. Pl. 2: 374. 1806. *C. flavus* Nees, Linnaea 19: 698. 1847.

British Honduras; Guatemala; Salvador; Nicaragua; Panama; at 900 m. or less. Texas, Mexico, West Indies and South America; western Africa.

Plants with short rhizomes, the culms stout or slender, 20–70 cm. high; leaves 3–7 mm. wide; bracts long and leaflike; spikes simply umbellate, often sessile, cylindric, very dense, yellowish, the spikelets turgid, 1–2-flowered, the scales acutish, striate; achene oblong-obovoid, triquetrous, brownish.

24. **Cyperus hermaphroditus** (Jacq.) Standl. Contr. U. S. Nat. Herb. 18: 88. 1916. *Carex hermaphrodita* Jacq. Coll. Bot. 4: 174. 1790. *Mariscus Jacquinii* HBK. Nov. Gen. & Sp. 1: 216. 1815. *C. thyrsiflorus* Jungh. Linnaea 6: 24. 1831. *C. Randuzii* var. *tenuis* Boeckl. Allgem. Bot. Zeitschr. 2: 17. 1896.

Guatemala; Salvador; Honduras; Nicaragua; Costa Rica; Panama; in moist soil at 1,350 m. or less. Mexico, West Indies, and South America.

Plants perennial, with short rhizomes, the culms mostly stout, 30–80 cm. high; leaves 4–8 mm. wide; bracts long and leaflike; spikes loose, usually simply umbellate, elongate, the spikelets green or yellow, divaricate, 5–9 mm. long, 2–4-flowered, the scales obtuse; achene narrowly ellipsoid, trigonous, brown.

Cyperus dissitiflorus Vahl, reported (as *Mariscus dissitiflorus* Clarke) from Costa Rica by Clarke, seems to be scarcely more than a form of this species.

25. **Cyperus Meyenianus** Kunth, Enum. Pl. 2: 88. 1837. *Mariscus Meyenianus* Nees in Mart. Fl. Bras. 2[1]: 49. 1842.

Salvador. Ranging from Mexico and the West Indies to South America.

Plants with short rhizomes; culms 20–40 cm. high; leaves 6–7 mm. wide; umbels 10–12-rayed, the rays 3–7 cm. long, the spikes solitary or 2–3-umbellulate, 10–15 mm. thick, dense; spikelets 6–8 mm. long, 1 mm. wide, spreading at right angles, containing 3–4 nutlets; scales oblong-elliptic, obtuse; achene linear-oblong.

Known in Salvador by the name "coyolillo."

26. **Cyperus prolixus** HBK. Nov. Gen. & Sp. 1: 206. 1815.

Guatemala; Costa Rica; Panama; in swamps, growing in water, at 1,300 m. or less. Mexico and South America.

Plants perennial, the culms very stout, 1–1.5 m. high or more; leaves long, 1–2 cm. wide; bracts large and leaflike; umbels large and much branched, the spikelets loosely spicate, about 1.5 cm. long, greenish or brownish, the scales lax, acute; achene linear-oblong, triquetrous, brownish.

27. **Cyperus articulatus** L. Sp. Pl. 44. 1753.

Guatemala; Honduras; Salvador; Nicaragua; Costa Rica; Panama (according to Kuntze); in wet soil, sometimes growing in water, at or near sea level. Generally distributed in tropical regions.

Plants perennial, stoloniferous, the culms terete, spongy, sometimes 2 m. long; leaves reduced to basal sheaths; spikelets loosely spicate, in large umbels, linear, 1–4 cm. long, 12–50-flowered, yellowish or brownish, the scales obtuse; rachilla winged; achene oblong, trigonous, black.

In Salvador, where it is called "sontul," the plant is said to be employed as a remedy for toothache. The name "enea" is reported from Venezuela.

28. **Cyperus giganteus** Vahl, Enum. Pl. 2: 364. 1805.

British Honduras (according to Hemsley); Honduras; Salvador; Nicaragua (according to Hemsley); Panama; in swamps, near sea level. Mexico, Greater Antilles, and South America.

Plants large and stout, the culms 1–2 m. high; leaves reduced to basal sheaths; bracts long and leaflike, 1–2 cm. wide; umbels very

large, the spikes elongate, lax, the spikelets slender, 1 cm. long or less, 8–14-flowered, stramineous, the scales obtuse; rachilla winged; achene oblong-ellipsoid, trigonous, blackish.

The plant often forms extensive and dense colonies in open swamps near the coast, attracting attention because of its luxuriant growth. In general appearance it is very much like the papyrus of the Nile.

29. **Cyperus rotundus** L. Sp. Pl. 45. 1753.

British Honduras; Guatemala; Honduras; Panama; at or near sea level. Tropical and subtropical regions of both hemispheres.

A perennial, with rhizomes, these sometimes tuber-bearing, the culms slender, 10–60 cm. high, bulbous-thickened at the base; leaves 3–6 mm. wide; bracts usually short; spikes lax, the spikelets few, linear, 1–2 cm. long, 20–30-flowered, the scales obtuse, closely appressed; rachilla winged; achene ellipsoid, trigonous, black.

30. **Cyperus radiatus** Vahl, Enum. Pl. 2: 369. 1806.

Guatemala; Costa Rica. Warmer regions of both hemispheres.

Culms stout, 50–100 cm. long; leaves 6–9 mm. wide; bracts long and leaflike; spikes elongate, dense, the spikelets 12–30-flowered, yellowish or brownish, the scales obtuse; rachilla winged; achene ovoid or ellipsoid, trigonous, blackish.

31. **Cyperus spectabilis** Schreb. ex R. & S. Syst. Veg. 2: 208. 1817, nomen nudum; Link, Hort. Berol. 1: 318. 1827; Boeckl. Linnaea 35: 605. 1868.

Honduras; in moist fields at 1,400 m. Mexico.

Plants perennial, 30–60 cm. high, slender; leaves 2–4 mm. wide; bracts long and leaflike; spikes short and dense, almost headlike, the spikelets mostly 3–5-flowered, yellowish brown, the scales rounded, very obtuse, somewhat spreading; achenes oblong-obovate, 3-angled, obtuse, usually fuscous.

32. **Cyperus compressus** L. Sp. Pl. 46. 1753.

Guatemala; Honduras; Salvador; Nicaragua; Costa Rica; at or near sea level. Warmer regions of both hemispheres.

Plants annual, slender, the culms tufted, 10–40 cm. high; leaves 2–3 mm. wide, the sheaths reddish; spikelets few, in short spikes, or often digitate, 1–2.5 cm. long, 3–5 mm. wide, 4–40-flowered, green; rachilla not winged; achene obovoid, triquetrous, black.

33. **Cyperus distans** L. f. Suppl. Pl. 103. 1781.

Nicaragua (according to Hemsley). Warmer regions of both hemispheres.

Plants perennial, stoloniferous, the culms 40–100 cm. high; leaves 6–10 mm. wide; bracts long and leaflike; spikelets 2–3 cm. long, 10–20-flowered, reddish, the scales remote; rachilla very narrowly winged; achene oblong, trigonous, blackish.

34. **Cyperus esculentus** L. Sp. Pl. 45. 1753. *C. fulvescens* Liebm. Vid. Selsk. Skrivt. V. 2: 22. 1851.

Salvador; Nicaragua (according to Hemsley); Costa Rica; Panama; in sand along the coast. Mexico; temperate and tropical regions of both hemispheres.

Plants perennial, stoloniferous, the stolons ending in small tubers, the culms solitary, 20–60 cm. high; leaves 2–7 mm. wide; bracts leaflike; spikes lax, the spikes linear, 1–2 cm. long, yellowish; achene obovoid, trigonous.

This species is sometimes cultivated, under the name "chufa," for the sweet edible tubers.

35. **Cyperus sphacelatus** Rottb. Descr. & Icon. 26. 1773.

Costa Rica; Panama; at or near sea level. Widely distributed in the warmer parts of America and in Africa.

Culms slender, tufted, 10–60 cm. high; leaves 3–5 mm. wide; bracts long and leaflike; spikelets few, loosely spicate, 1–2.5 cm. long, about 3 mm. wide, green or yellowish; achene obovoid, triquetrous, black.

36. **Cyperus tenerrimus** Presl, Rel. Haenk. 1: 166. 1830. *C. Schomburgkianus* Nees in Hook. Journ. Bot. 2: 393. 1840. *C. cymbaeformis* Liebm. Dansk. Vid. Selsk. Skrivt. V. 2: 20. 1851.

Guatemala; Honduras; Salvador; Nicaragua; Costa Rica; moist soil, at 1,400 m. or less. Mexico; northern South America.

Plants apparently perennial, with fibrous roots, the culms slender, 10–20 cm. high, bulbous-thickened at the base; leaves 1–2 mm. wide; bracts 4–8, very long and leaflike; spikelets crowded in a small dense head, nearly white, ovate, compressed, the scales curved, obtuse; achene oblong, trigonous, whitish.

One Guatemalan collection has been determined as *C. seslerioides* HBK., a Mexican species of which I have seen no Central American material. The name "pelillo" is applied to this species in Salvador.

37. **Cyperus humilis** Kunth, Enum. Pl. 2: 23. 1837. *C. humilis* var. *elatior* Britton, Bull. Torrey Club 15: 99. 1888.

Guatemala; in wet soil at 350–1,350 m. Mexico; Martinique; Cuba.

Plants annual, the culms tufted, 5–14 cm. high; leaves 2–3 mm. wide; bracts leaflike; spikelets oblong, numerous, crowded in a dense head, 1 cm. long or less, about 40-flowered, pale green, strongly compressed, the scales acute, 3-nerved; achene narrowly obovoid, trigonous, black.

38. **Cyperus uncinatus** Poir. in Lam. Encycl. 7: 247. 1806. *C. cuspidatus* HBK. Nov. Gen. & Sp. 1: 247. 1815.

Guatemala; Salvador; Costa Rica; in moist soil, at 750–1,200 m. In the warmer regions of both hemispheres.

Culms very slender, tufted, 5–15 cm. high; leaves 1–2 mm. wide-bracts leaflike; umbels simple, the spikelets loosely clustered, 1 cm. long or less, 1.5 mm. wide, 15–50-flowered, the scales mucronate; acuminate, oblique; achene oblong-obovoid, trigonous, pale.

Some of the Central American specimens were determined by Clarke as *C. amabilis* Vahl, but they do not differ appreciably from others that he determined as *C. uncinatus*. Central American material referred to *C. glareosus* Liebm. appears to be referable to *C. uncinatus*.

39. **Cyperus canus** Presl, Rel. Haenk. 1: 179. 1830.

Guatemala; Salvador; Costa Rica. Mexico.

Plants stout, perennial, the culms about 1 m. high; leaves reduced to sheaths; bracts leaflike, about 1 cm. wide; umbels large, compound, the spikelets very numerous, linear-oblong, 1 cm. long, the scales brownish or reddish, acute, closely appressed; achenes minute, ellipsoid, trigonous, brownish.

In Salvador, where it is called "tule," "tul de petate," and "tul silvestre," this plant is of substantial economic importance, and it is sometimes cultivated in fields of considerable extent. The outer part of the culms is used in large amounts for making *petates* or mats, especially those employed on beds as mattresses. The inner soft portion of the culm is used for making less durable articles, such as fans for blowing up fires, bottle crates, etc.

The very similar *Cyperus alternifolius* L., or umbrella-plant, native of Madagascar, is cultivated commonly for ornament in Central American gardens. In Salvador it is known by the name "tule de jardín."

40. **Cyperus virens** Michx. Fl. Bor. Amer. 1: 28. 1803.

Guatemala (according to Hemsley); Costa Rica; in moist soil, at 900–2,100 m. United States, Mexico, West Indies, and South America.

Plants perennial, with short rhizomes, the culms stout, 1 m. high or less; leaves 6–9 mm. wide, thick; umbel compound, the spikelets very numerous, 12 mm. long or less, 3–4 mm. wide, greenish, the scales obtuse; achene ellipsoid, trigonous, pale brownish.

Known in Costa Rica by the name "junco."

41. **Cyperus Luzulae** (L.) Retz. Obs. Bot. 4: 11. 1786. *Scirpus Luzulae* L. Sp. Pl. ed. 2. 75. 1762. *?C. guatemalensis* Gandog. Bull. Soc. Bot. France 66: 297. 1920, non Steud. 1855.

British Honduras; Guatemala; Honduras; Nicaragua; Costa Rica; Panama; in moist or wet soil, at 900 m. or less. Widely distributed in tropical America.

Plants perennial, with short woody rhizomes, the culms 1 m. high or less, stout; leaves 3–7 mm. wide; bracts 6–10, long and leaflike; umbels chiefly simple, dense, the spikelets densely capitate, 3–4 mm. long, 2–3 mm. wide, brownish, 6–10-flowered, strongly compressed, the scales obtuse; achene oblong, trigonous, whitish.

Called "junco" in Panama, and "mulinillo" in Tabasco.

42. **Cyperus surinamensis** Rottb. Descr. 35. *pl. 6, f. 5.* 1773.

British Honduras; Guatemala; Honduras; Salvador; Nicaragua; Costa Rica; Panama; in swamps or wet soil, at 1,200 m. or less. Generally distributed in tropical America.

Plants perennial, the culms 20–60 cm. high; leaves 2–3 mm. wide; bracts long and leaflike; umbels simple or compound, the spikelets numerous, 4–11 mm. long, 2–3 mm. wide, 30–40-flowered, greenish or yellowish, the scales apiculate; achenes minute, ellipsoid, trigonous, brownish.

43. **Cyperus ochraceus** Vahl, Enum. Pl. 2: 325. 1805.

Guatemala; Honduras; in thickets or sandy places, near sea level. Widely distributed in tropical America.

Perennial, rather stout, 30–60 cm. high or more; leaves up to 6 mm. wide; bracts numerous, spreading, some of them much longer than the compound or simple umbel; umbel rays 15 cm. long or less, the spikelets numerous, capitate, compressed, obtuse, many-flowered, 5–12 mm. long, 2 mm. wide; scales yellow, subobtuse; stamen 1; achene ovoid, 3-angled, narrowed at each end.

44. **Cyperus simplex** HBK. Nov. Gen. & Sp. 1: 207. 1815.

Costa Rica; Panama; in forests or fields, at 300 m. or less. Mexico; northern South America.

Plants perennial, with rhizomes, the culms 2–15 cm. long, slender; leaves long, 3–7 mm. wide; bracts very long and leaflike; umbels simple, the rays mostly 10–20 cm. long; spikelets 1–3 at the end of each ray, 1–2 cm. long, 15–40-flowered, strongly compressed, pale, the scales glandular; achene obovoid, truncate, trigonous, whitish.

The name given to this plant in Panama is "junco."

45. **Cyperus haspan** L. Sp. Pl. 45. 1753. *C. efoliatus* Boeckl. Allgem. Bot. Zeitschr. 1: 226. 1895.

Guatemala; Honduras; Costa Rica; in swamps or wet soil, at 1,500 m. or less. Warmer regions of both hemispheres.

Plants perennial, with rhizomes, the culms 10–70 cm. long; leaves mostly short and reduced to sheaths; bracts commonly 2 and shorter than the umbel, sometimes elongate; umbel usually compound, the spikelets numerous, 5–15 mm. long, 10–40-flowered, compressed, green or reddish, the scales obtuse; achene ovoid or obovoid, trigonous, whitish.

Called "junco" in Panama.

46. **Cyperus chorisanthus** Clarke, Contr. U. S. Nat. Herb. 10: 449. 1908.

Type from forests of Boruca, Costa Rica, at 460 m.

Plants perennial, with thick woody rhizomes, the culms about 60 cm. high; leaves elongate, 1 cm. wide or less; bracts 5–6, long and leaflike; umbel large, compound, the spikelets numerous, 8–13 mm. long, about 14-flowered, greenish; achene ellipsoid, trigonous, black.

47. **Cyperus diffusus** Vahl, Enum. Pl. 2: 321. 1806.

Guatemala; Honduras; Salvador; Nicaragua; Costa Rica; Panama; in moist or dry soil, usually in forest or thickets, at 1,200 m. or less. Warmer regions of both hemispheres.

Plants perennial, the culms 30–60 cm. long; leaves numerous, 4–12 mm. wide; bracts 4–10, long and leaflike; umbels usually compound, the spikelets few or numerous, 1–2 cm. long, 10–24-flowered, greenish, the scales mucronate; achene broadly ellipsoid, triquetrous, blackish.

This species was listed by Hemsley as *C. elegans* L. In Panama it is given the name "junquillo."

48. **Cyperus elegans** L. Sp. Pl. 45. 1753. *C. viscosus* Sw. Prodr. Fl. Ind. Occ. 20. 1788.

British Honduras; Nicaragua; at or near sea level. Widely distributed in tropical America.

Plants perennial, viscid, the culms 20–70 cm. long; leaves 2–6 mm. wide; bracts long and leaflike; umbels simple or compound, the spikelets densely clustered, 9 mm. long or less, about 10-flowered, greenish, the scales acute; achene broadly obovoid, black.

49. **Cyperus nubigenus** Britt. & Standl. ex Standl. Journ. Washington Acad. Sci. 15: 472. 1925.

Costa Rica; type from Las Nubes, Province of San José, at 1,900 m., growing on stream banks.

A perennial about 1 m. high; leaves 1–2 cm. wide; bracts numerous, leaflike, equaling the rays, 7–15 mm. wide; primary rays numerous, 4–12 cm. long, the secondary rays very numerous, 1–5 cm. long; spikelets few or numerous, in dense glomerules at the ends of the secondary rays, lance-oblong, 1 cm. long, 3 mm. wide; scales 8–11, acute or acuminate, oblique and rather lax, dull-vinaceous, the keel green; achene 1 mm. long, trigonous, smooth, dull brownish.

DOUBTFUL SPECIES

CYPERUS LIEBMANNI Steud. Syn. Pl. Glum. 2: 7. 1855. *C. inconspicuus* Liebm. Dansk. Vid. Selsk. Skrivt. V. 2: 197. 1851.

Type from San José, Costa Rica.

Annual, the culms 5 cm. high; leaves longer than the culm; umbel 5–6-rayed, the outer rays 12–15 mm. long, with 6–9 spikes

at the tip; spikelets spicate, spreading, elongate-lanceolate, acute, 4 mm. long, compressed, 6–8-flowered; scales ovate, imbricate, compressed, obtuse, mucronate, rufescent, the keel green.

CYPERUS MACROLEPIS Boeckl. Allgem. Bot. Zeitschr. 1: 226. 1895.

Type from Costa Rica.

CYPERUS SERTULARINUS Liebm. Dansk. Vid. Selsk. Skrivt. V. 2: 213. 1851.

Type from Masaya, Nicaragua.

Plants with rhizomes, the culms 1 m. high or less; leaves shorter than the culms, 1 cm. wide; umbel decompound, 10-rayed, the rays unequal, the spikes numerous, elongate, cylindric, dense; spikelets very numerous, divergent, easily deciduous, 12 mm. long, compressed, linear, acute, 7–8-flowered, the scales imbricate, oblong, very shortly mucronate, fuscous.

3. ELEOCHARIS R. Br.

Plants annual or perennial, the culms simple, terete or angulate; leaves reduced to sheaths; spikelet solitary, terminal, erect, few- to many-flowered, not involucrate, the scales spirally imbricate; perianth of 1–12 bristles, sometimes wanting; stamens 2–3; style 2–3-cleft; achene biconvex or 3-angulate, the style base persistent as a tubercle. —About 140 species, widely distributed.

The generic name is written as *Heleocharis* by some authors.

Scales firm, indurate, scarcely keeled or nerved.

Culms acutely 3-angulate above.

Achene not constricted, gradually prolonged into a cellular beak.....1. *E. mutata.*

Achene constricted below the summit into a neck about half the width of the achene.....2. *E. fistulosa.*

Culms terete.

Culms transversely septate.....3. *E. interstincta.*

Culms not septate.....4. *E. plicarhachis.*

Scales thin, keeled or nerved.

Style 2-cleft.

Sheaths scarious at the apex.

Spikelets green or brownish.....5. *E. flaccida.*

Spikelets castaneous.....6. *E. maculosa.*

Sheaths not scarious at the apex.

Plants perennial, with rhizomes.....7. *E. nodulosa.*

Plants annual, with fibrous roots.....8. *E. caribaea.*

Style 3-cleft.

Culms 3–8 mm. thick.....9. *E. geniculata.*

Culms less than 2.5 mm. thick.

Achene cancellate or longitudinally costate.

Achene longitudinally costate.....10. *E. acicularis.*

Achene cancellate, not costate.....11. *E. retroflexa.*

Achene smooth or obscurely reticulate.

Plants annual.

Culms setaceous, not angulate.....12. *E. minima.*

Culms stout, 4-angulate.....13. *E. Durandii.*

Plants perennial, with rhizomes.

Achenes white or nearly so.....14. *E. sulcata.*

Achenes blackish.....15. *E. pachystyla.*

1. **Eleocharis mutata** (L.) R. & S. Syst. Veg. 2: 155. 1817. *Scirpus mutatus* L. Pl. Jam. Pug. 6. 1759.

Guatemala; Costa Rica; Panama; in wet soil, ranging from sea level to 1,600 m. Widely distributed in tropical and subtropical America.

Plants with long stolons, the culms 30–70 cm. high, 3–6 mm. thick, not septate; spikelet 1.5–4 cm. long, 4–6 mm. thick, the scales obtuse, greenish; bristles longer than the achene; style 3-cleft; achene dark brown, faintly cancellate, the tubercle broader than the apex of the achene.

2. **Eleocharis fistulosa** (Poir.) Link in Spreng. Jahrb. 3: 78. 1820. *Scirpus fistulosus* Poir. Encycl. 6: 749. 1804.

Reported from Chepo, Panama (Svenson, Rhodora 31: 153. 1929). Widely distributed in tropical America and in Asia and Africa.

Culms sharply triangular, 40–60 cm. high; sheaths brown, membranous, rather loose, pointed at the summit; spikelets 1.5–3.5 cm. long, acute; scales straw-colored or gray, obtuse or somewhat acute, firm, striate; achene 2–2.4 mm. long, obovate, green or light brown, with deeply pitted, quadrangular cells; bristles usually exceeding the achene.

3. **Eleocharis interstincta** (Vahl) R. & S. Syst. Veg. 2: 149. 1817. *Scirpus interstinctus* Vahl, Enum. Pl. 2: 251. 1805.

British Honduras; Guatemala; Panama; in wet soil, ranging from sea level to 1,200 m. United States, Mexico (?), West Indies, and South America.

Plants stoloniferous, the culms 40–70 cm. high, about 5 mm. thick; spikelet 2–4 cm. long, 3–5 mm. thick, obtuse, the scales very obtuse, greenish; bristles slightly longer than the achene; style usually 3-cleft; achene pale, faintly striate, the tubercle conic, black.

4. **Eleocharis plicarhachis** (Griseb.) Svenson, Rhodora 31: 158. 1929. *Scirpus plicarhachis* Griseb. Cat. Pl. Cub. 239. 1866. *E. variegata* var. *laxiflora* Clarke, Contr. U. S. Nat. Herb. 10: 455. 1908, non *Scirpus laxiflorus* Thwaites.

Costa Rica (Buenos Aires, at 200 m.). Tropical America.

Plants stoloniferous, the culms 20–40 cm. high, 2–3 mm. thick; spikelet 2–2.5 cm. long, about 3 mm. thick, the scales greenish; bristles about twice as long as the achene; style 3-cleft; achene minutely reticulate, faintly striate, the tubercle ovoid-pyramidal.

5. **Eleocharis flaccida** (Reichenb.) Urban, Symb. Antill. 2: 165. 1900. *Scirpus flaccidus* Reichenb. ex Spreng. Tent. Suppl. 3. 1828. *E. ochreata* Steud. Syn. Pl. Cyp. 79. 1855. *E. albovaginata* Boeckl. Vid. Medd. Kjobenhavn 1869: 133. 1870. *E. Tuerckheimii* Boeckl. Cyp. Nov. 1: 16. 1888. *E. Pittieri* Boeckl. Allgem. Bot. Zeitschr. 2: 35. 1896.

Guatemala; Honduras; Nicaragua; Costa Rica; in wet soil, at about 1,300–1,400 m. United States, West Indies, and South America; Old World tropics.

Rhizome very short or none; culms 5–30 cm. long, about 1 mm. thick, angulate; spikelet 3–6 mm. long, the scales obtuse, greenish; bristles equaling the achene, the latter obovate, smooth, brown, the tubercle small, conic.

Eleocharis Tuerckheimii was described from Cobán, Guatemala; *E. Pittieri* from San José, Costa Rica. A collection of *E. flaccida* was reported from Costa Rica by Clarke as *E. olivacea* Torr.

6. **Eleocharis maculosa** (Vahl) R. Br. Prodr. Nov. Holl. 224. 1810. *Scirpus maculosus* Vahl, Enum. Pl. 2: 247. 1806.

Guatemala (Alta Verapaz, at 1,350 meters, in wet soil). Southern United States, West Indies, and South America.

Plants with slender dark stolons, the culms 10–35 cm. high, the sheaths thin and scarious above; spikelet ovoid, 5–12 mm. long, 3–4 mm. thick, the scales with scarious margins; bristles 7–8, equaling the achene, retrorsely scabrous, brown; achene obovoid, plano-convex, castaneous, the tubercle narrow, pale.

7. **Eleocharis nodulosa** (Roth) Schult. in R. & S. Syst. Veg. Mant. 2: 87. 1824. *Scirpus nodulosus* Roth, Nov. Pl. Ind. Or. 29. 1821.

Guatemala; Honduras; Salvador; Nicaragua; Costa Rica; Panama; in wet soil, ranging from sea level to 1,400 m. Widely distributed in tropical America.

Plants with rhizomes, the culms 20–70 cm. long, rather stout, 2–2.5 mm. thick; spikelet 1–2.5 cm. long, fuscous or purplish; bristles equaling the achene, the latter ovoid, greenish brown, smooth, the tubercle small, compressed-pyramidal.

Called "junco" in Costa Rica.

8. **Eleocharis caribaea** (Rottb.) Blake, Rhodora 20: 24. 1918. *Scirpus caribaeus* Rottb. Descr. 24. 1772.

British Honduras; Guatemala; Honduras; Salvador; Nicaragua; Costa Rica; Panama; in wet soil, at 1,800 m. or less. Generally distributed in tropical America, and in the Old World.

Culms slender, 5–30 cm. high, tufted, stiff; spikelet ovoid, obtuse, 3–5 mm. long, the scales obtuse, pale or dark brown, scarious-margined; bristles equaling the achene, the latter obovate, black, smooth and shining, the tubercle minute, depressed.

This plant usually has been called *E. capitata* (L.) R. Br., a name belonging properly to a species of the United States (*E. tenuis* Schult.).

9. **Eleocharis geniculata** (L.) R. & S. Syst. Veg. 2: 150. 1817. *Scirpus geniculatus* L. Sp. Pl. 48. 1753.

Guatemala; Honduras; Salvador; Costa Rica; Panama; in wet soil, often in marshes or along stream banks, ranging from sea level to 1,800 m. Generally distributed in tropical America.

Plants with rhizomes, the culms 30–100 cm. high, transversely septate, terete; spikelet 1–3 cm. long, 5–9 mm. thick, brown, the scales acutish; bristles equaling or longer than the achene, this ellipsoid, trigonous, smooth or granular, yellow-brown, the tubercle conic.

In Costa Rica, where it is called "junco," this plant is used extensively for making thick mats that are used as mattresses on beds. In the mountains of that country there are often large meadows overgrown almost exclusively with the plant. In Salvador this same species is called "tul," "tule," "sintule," and "zuntule."

10. **Eleocharis acicularis** (L.) R. Br. Prodr. Fl. Nov. Holl. 224. 1810. *Scirpus acicularis* L. Sp. Pl. 48. 1753.

Costa Rica (Volcán Poás and Cerro de Las Vueltas, at 2,500–3,000 m.); reported, perhaps incorrectly, from Salvador by Hemsley. Widely distributed in both hemispheres.

Plants with filiform rhizomes, the culms capillary, 3–15 cm. long; spikelet 3–6 mm. long, usually 4–6-flowered, brown or castaneous, the scales obtuse; bristles 3–4 or none; achene obovoid-oblong, longitudinally 12–15-striate, pale, the tubercle minute, acute.

11. **Eleocharis retroflexa** (Poir.) Urban, Symb. Antill. 2: 165. 1900. *Scirpus retroflexus* Poir. in Lam. Encycl. 6: 753. 1804. *E. chaetaria* R. & S. Syst. Veg. 2: 154. 1817.

British Honduras; Guatemala; Honduras; Salvador; Nicaragua; Costa Rica; Panama; in moist soil, usually in meadows, fields, or pastures, ranging from sea level to 2,500 m. Widely distributed in the tropics of both hemispheres.

Rhizomes filiform or none; culms capillary, 2–20 cm. long; spikelet 3–4 mm. long, containing 1–4 achenes, green, sometimes spotted with purple, the scales acutish; bristles equaling the achene, this obovoid, triquetrous, white, coarsely cancellate, the tubercle pyramidal.

In wet meadows this plant often forms extensive pure colonies, consisting of thousands of the delicate, bright green culms closely matted together.

12. **Eleocharis minima** Kunth, Enum. Pl. 2: 139. 1837.

Honduras (in bog at 1,500 m.); Costa Rica (Cañas Gordas, at 1,100 m.). Widely dispersed in tropical America.

Culms cespitose, very slender, 1–20 cm. long; spikelet 2–4 mm. long, 8–10-flowered, the scales brown or purplish, acutish; bristles shorter than the achene, this obovoid, smooth, white, 3-angulate, the tubercle depressed-globose.

13. **Eleocharis Durandii** Boeckl. Allgem. Bot. Zeitschr. 2: 34. 1896.

Costa Rica (type from Buenos Aires); Panama.

Culms tufted, 5–30 cm. high; spikelet 4–7 mm. long, obtuse, the scales greenish; bristles equaling the achene, this whitish, smooth, 3-angulate, the tubercle short, pyramidal.

14. **Eleocharis sulcata** (Roth) Nees, Linnaea 9: 294. 1834. *Scirpus sulcatus* Roth, Nov. Pl. Ind. Or. 30. 1821. *Limnochloa calyptrata* Liebm. Dansk. Vid. Selsk. Skrivt. 2: 56. 1849. *E. calyptrata* Steud. Syn. Pl. Glum. 2: 81. 1855. *E. Rothiana* Boeckl. Flora 43: 3. 1860. *E. costaricensis* Boeckl. Allgem. Bot. Zeitschr. 2: 34. 1896. *E. purpureo-vaginata* Boeckl. Allgem. Bot. Zeitschr. 2: 34. 1896.

Guatemala; Honduras; Salvador; Nicaragua; Costa Rica; Panama; wet soil, ascending to 1,800 m. Mexico; South America.

Rhizomes short, the culms tufted, 10–30 cm. high; spikelet 4–7 mm. long, many-flowered, obtuse, fuscous or purplish, the scales obtuse; bristles shorter than the achene, this trigonous, obovoid, smooth, the tubercle short and broad.

One specimen from Guatemala, which probably belongs here, was determined by Clarke as *E. montana* (HBK.) R. & S. The plants are too immature for certain identification. *Eleocharis calyptrata* was described from Segovia, Nicaragua; *E. costaricensis* from Boruca, Costa Rica; and *E. purpureo-vaginata* from Buenos Aires, Costa Rica.

15. **Eleocharis pachystyla** (C. Wright) Clarke in Urban, Symb. Antill. 2: 72. 1900. *Scirpus pachystylus* C. Wright in Sauvalle, Fl. Cub. 174. 1871.

Costa Rica (Cañas Gordas, in swamp at 1,100 m.). Cuba and northern South America.

Rhizomes stout, the culms 40–70 cm. long, stout; spikelet 6–7 mm. long, obovoid, very obtuse, brownish, the scales obtuse; bristles longer than the achene, this obovoid, trigonous, the tubercle pyramidal.

4. STENOPHYLLUS Raf.

Annuals or perennials with slender culms, leafy below; leaves narrowly linear or filiform; spikelets solitary, umbellate, or capitate, subtended by an involucre of 1 to several bracts; scales spirally imbricate; flowers perfect; perianth none; stamens 2–3; style 2–3-cleft, the base swollen and persistent as a tubercle upon the achene; achene 3-angled or lenticular.—About 90 species, in temperate and tropical regions of both hemispheres.

Spikelets present in the axils of the leaves.....5. *S. Funckii.*

Spikelets terminal only.

Spikelet 1.....1. *S. paradoxus.*

Spikelets few or many.

Spikelets sessile in umbellate fascicles.....2. *S. junciformis.*

Spikelets pedicellate, solitary on the rays of the umbel.

Culms glabrous above.....3. *S. tenuifolius.*

Culms pubescent.....4. *S. hirtellus.*

1. **Stenophyllus paradoxus** (Spreng.) Standl. Contr. U. S. Nat. Herb. 18: 88. 1916. *Schoenus paradoxus* Spreng. Syst. Veg. 1: 190. 1825. *Bulbostylis paradoxa* Kunth, Enum. Pl. 206. 1837. *Rynchospora perrigida* Boeckl. Allgem. Bot. Zeitschr. 2: 93. 1896.

Costa Rica; Panama; on plains, altitude about 250 m. South America; type from Caracas, Venezuela.

Plants perennial, forming very dense, globose or columnar clumps; culms stiff, 5–16 cm. long, glabrous; leaves filiform, stiff, shorter than the culms; spikelet about 1 cm. long, hairy; style 3-cleft; achene obovoid, pale brown.

2. **Stenophyllus junciformis** (HBK.) Britton, Bull. Torrey Club 43: 442. 1916. *Isolepis junciformis* HBK. Nov. Gen. & Sp. 1: 222. 1815. *Bulbostylis junciformis* Kunth, Enum. Pl. 2: 211. 1837.

Salvador; Costa Rica; Panama; in dry soil, ascending to 1,000 m.

Culms tufted, 10–80 cm. long, glabrous; leaves setaceous, shorter than the culms; bracts mostly shorter than the umbels; spikelets 4–8 mm. long, dark brown; style 3-cleft; achene obovoid, brown, smooth or reticulate.

3. **Stenophyllus tenuifolius** (Rudge) Britton, Bull. Torrey Club 43: 448. 1916. *Scirpus tenuifolius* Rudge, Pl. Guian. 18. *pl. 22.* 1805.

Guatemala; Salvador; Costa Rica; at altitudes of 2,300 m. or less. Also in South America.

Plants annual, tufted, 10–40 cm. high; leaves setaceous, shorter than the culms, glabrous or nearly so; bracts longer or shorter than the umbels; spikelets about 5 mm. long, 6–15-flowered, dark brown; style 3-cleft; achene obovoid, pale or brown, transversely undulate.

The Central American material has been referred to *S. capillaris* (L.) Britton (*Fimbristylis capillaris* Gray; *Bulbostylis capillaris* Clarke), but, according to Britton, no true *S. capillaris* is found in Central America.

4. **Stenophyllus hirtellus** (Schrad.) Standl. Journ. Washington Acad. Sci. 15: 457. 1925. *Isolepis hirtella* Schrad. in Schult. Mant. 2: 70. 1824. *Bulbostylis Langsdorffiana* Kunth, Enum. Pl. 2: 214. 1837. *B. hirtella* Nees in Mart. Fl. Bras. 2[1]: 85. 1843. *Fimbristylis ciliaris* var. *pilosa* Britton, Bull. Torrey Club 15: 102. 1888.

Guatemala, at 1,500 m. Mexico and South America.

Plants perennial, tufted, 10–30 cm. high; leaves setaceous, erect, half as long as the culms, pubescent; spikelets few, 4–7 mm. long, castaneous; style 3-cleft; achene obovoid, yellow-brown, smooth or faintly reticulate.

5. **Stenophyllus Funckii** (Steud.) Britton, Bull. Torrey Club 21: 30. 1894. *Isolepis Funckii* Steud. Syn. Pl. Glum. 2: 91. 1855.

Salvador. Ranging from southwestern United States to Bolivia.

An annual with filiform culms and leaves, 3–8 cm. high; spikelets 4–8 mm. long, solitary at the apex of the culm and sessile at the base of the leaves, the basal spikes few-flowered, sometimes reduced to a single flower; scales of the terminal spike lanceolate, acuminate, castaneous, the lowest often elongate and bractlike; bristles none; achene obovoid, trigonous, with short beak, white, obscurely rugulose.

5. FIMBRISTYLIS Vahl

Plants annual or perennial, the culms leafy below; spikelets usually capitate or umbellate, sometimes solitary, terete, involucrate, the scales usually spirally imbricate, all fertile; perianth none; stamens 1–3; style 2–3-cleft, deciduous; achene lenticular, biconvex, or 3-angulate.—About 125 species, of wide distribution.

Style branches 3.

Culms bearing each a single spikelet.

Scales somewhat 2-ranked, indurate.....1. *F. monostachya.*

Scales spirally imbricate, thin.....2. *F. Preslii.*

Culms bearing numerous spikelets.

Spikelets 2–4 mm. long, very obtuse.....3. *F. miliacea.*

Spikelets about 6 mm. long, acute.....4. *F. complanata.*

Style branches 2.

Achene longitudinally striate; plants usually annual 5. *F. diphylla.*

Achene smooth or reticulate, not striate; plants perennial.

Scales puberulent near the apex.....6. *F. ferruginea.*

Scales glabrous.

Leaves much shorter than the culms; inflorescence dense and congested.....7. *F. spathacea.*

Leaves nearly or fully as long as the culms; inflorescence open.

Scales coriaceous, lustrous.....8. *F. spadicea.*

Scales thinner, dull.....9. *F. castanea.*

1. **Fimbristylis monostachya** (L.) Hassk. Pl. Jav. Rar. 61. 1848. *Cyperus monostachyus* L. Mant. Pl. 2: 180. 1771. *Abilgardia monostachya* Vahl, Enum. Pl. 2: 296. 1806.

Guatemala; Costa Rica; Panama; at 250–1,400 m. Mexico, West Indies, and South America; Old World tropics.

Plants glabrous or nearly so, densely cespitose, the culms 5–40 cm. high; leaves setaceous, equaling or shorter than the culms; bract usually shorter than the spikelet, the latter pale, 12–15 mm. long; achene stramineous or brownish, somewhat tuberculate.

2. **Fimbristylis Preslii** Kunth, Enum. Pl. 2: 228. 1837. *Abilgardia pubescens* Presl, Rel. Haenk. 1: 180. 1830, non *F. pubescens* Link, 1820.

Guatemala (according to Clarke); Costa Rica (Nicoya). Colombia.

Culms very slender, scabrous; leaves setaceous, pubescent; spikelets 4–5 mm. long, the scales obtuse, brownish; achene abruptly narrowed below, yellowish brown, obovoid-pyriform.

3. **Fimbristylis miliacea** (L.) Vahl, Enum. Pl. 2: 287. 1805. *Scirpus miliaceus* L. Syst. Nat. ed. 10. 868. 1759. *Trichelostylis miliacea* var. *microstachya* Nees in Seem. Bot. Voy. Herald 222. 1854.

Guatemala; Honduras; Salvador; Nicaragua (according to Hemsley); Costa Rica; Panama; in wet, often sandy soil, at 460 m. or less. Tropical regions of both hemispheres.

Plants annual, slender, glabrous, 20–60 cm. high; leaves usually shorter than the culms, 1–2 mm. wide; spikelets numerous, subglobose, very obtuse, brown; achenes transversely lineate, stramineous or pale brown.

4. **Fimbristylis complanata** (Retz.) Link, Hort. Berol. 1: 292. 1827. *Scirpus complanatus* Retz. Obs. Bot. 5: 14. 1789.

Panama; in dry fields or savannas. Widely distributed in the tropics of both hemispheres.

Plants glabrous, with very short or no rhizomes, the culms slender, 20–80 cm. high; leaves shorter than the culms, 1.5–3 mm. wide; spikelets few or numerous, solitary, brown; achene trigonous, transversely lineate, yellow-brown.

5. **Fimbristylis diphylla** (Retz.) Vahl, Enum. Pl. 2: 289. 1806. *Scirpus diphyllus* Retz. Obs. Bot. 5: 15. 1789. *F. pentastachya* Boeckl. Flora 40: 36. 1857. *F. polymorpha* Boeckl. Vid. Medd. Kjobenhavn 1869: 141. 1870. *F. Holwayana* Fernald, Proc. Amer. Acad. 36: 492. 1901.

British Honduras; Guatemala; Honduras; Salvador; Costa Rica; Panama; in swamps or moist soil, often growing in sand or gravel, sometimes a weed in cultivated or waste ground, ranging from sea level to 1,800 m. Generally distributed in tropical America; also in the Old World tropics.

Plants glabrous or pubescent, the culms 10–60 cm. high; leaves shorter than the culms; umbels loose and open, the spikelets numerous, 5–10 mm. long, solitary, obtuse, brown or castaneous; achenes obovoid, biconvex, white or stramineous, 5–11-costate on each surface.

Occasionally forms of this species are found in which the inflorescence is reduced to a single spikelet. Some authors use for this plant the name *Fimbristylis annua* (All.) R. & S., but, according to Britton, that name should be restricted to an Old World plant. *F. diphylla* is one of the most common and abundant of the sedges of Central America, occurring nearly everywhere at lower elevations.

6. **Fimbristylis ferruginea** (L.) Vahl, Enum. Pl. 2: 291. 1806. *Scirpus ferrugineus* L. Sp. Pl. 50. 1753. *F. sublateralis* Steud. Syn. Pl. Glum. 2: 114. 1855.

Panama (on the Atlantic coast). West Indies and South America; Old World.

Plants glabrous or nearly so, the culms 20–80 cm. high, the rhizomes very short; leaves very short, the blades often nearly obsolete; spikelets 5–20, about 1 cm. long, ovoid, the scales brown or ferruginous; achene obovoid, biconvex, smooth, brownish.

7. **Fimbristylis spathacea** Roth, Nov. Pl. 24. 1821. *Scirpus glomeratus* Retz. Obs. Bot. 4: 11. 1786. *F. glomerata* Urban, Symb. Antill. 2: 166. 1900, non Nees, 1834. *F. melanospora* Fernald, Proc. Amer. Acad. 36: 491. 1901.

British Honduras; Honduras; Panama; on or near beaches along Atlantic coast. Widely distributed in the tropics of both hemispheres.

Plants glabrous or nearly so, with short thick rhizomes, the culms stout, 10–40 cm. high; leaves narrow, stiff; spikelets numerous, crowded, 3–6 mm. long, obtuse, brownish; achene obovoid, minute, usually almost black, biconvex, granulate.

8. **Fimbristylis spadicea** (L.) Vahl, Enum. Pl. 2: 294. 1806. *Scirpus spadiceus* L. Sp. Pl. 51. 1753.

Guatemala; Honduras; Salvador; Costa Rica; Panama; usually on sea beaches or tidal flats, in Guatemala on lake shores at an elevation of 1,100 m. West Indies and South America.

Plants glabrous, with short rhizomes, the culms 20–70 cm. high; leaves narrow, stiff, the bases indurate and castaneous; spikelets few or numerous, 1–1.5 cm. long, the scales obtuse, castaneous; achene biconvex, orbicular, somewhat reticulate, dark brown.

Called "tul fino" and "espárrago" in Guatemala.

9. **Fimbristylis castanea** (Michx.) Vahl, Enum. Pl. 2: 292. 1806. *Scirpus castaneus* Michx. Fl. Bor. Amer. 1: 31. 1803.

Costa Rica (Salinas Bay). United States and Mexico.

Plants glabrous or nearly so, the culms slender, 20–70 cm. high; leaves almost setaceous; spikelets few, ellipsoid, obtuse, brown; achene obovoid, smooth, delicately reticulate, brownish.

6. SCIRPUS L.

Annuals or perennials, the culms leafy below, the leaves often reduced to sheaths; flowers perfect, the spikelets terete or slightly compressed, the scales spirally imbricate; perianth of 1–6 bristles; stamens 2–3; style 2–3-cleft, deciduous; achene triangular or lenticular.—About 150 species, widely distributed.

Spikelets numerous, umbellate-paniculate or in umbellate heads.

Spikelets in umbellate heads; leaves well developed . . 1. *S. cubensis.*

Spikelets loosely umbellate-paniculate; leaves reduced to sheaths. 2. *S. californicus.*

Spikelets few, capitate, appearing lateral.

Culms triangular, 2–7 mm. thick . . . . . 3. *S. Olneyi.*

Culms terete, 1 mm. thick or less . . . . . 4. *S. inundatus.*

1. **Scirpus cubensis** Kunth, Enum. Pl. 2: 172. 1837.

Guatemala (Dueñas, according to Hemsley); Honduras; Nicaragua; Panama; along the Atlantic coast, at or near sea level, usually growing in shallow water. Widely distributed in tropical America.

Plants stout, perennial, glabrous, with long stolons, the culms erect or decumbent, 30–70 cm. long; leaves basal, 5–9 mm. wide, usually equaling the culms; umbels simple, the bracts long and leaflike, the heads globose, 1–1.5 cm. in diameter, composed of very numerous spikelets, these 4–8 mm. long; scales ovate, acute, brown; bristles none; style bifid; achene narrowly obovoid, smooth, pale.

2. **Scirpus californicus** (C. A. Mey.) Britton, Trans. N. Y. Acad. Sci. 11: 6. 1892. *Elytrospermum californicum* C. A. Mey. Mém. Acad. Pétersb. V. 1: 200. *pl. 2.* 1830. *S. riparius* Presl, Rel. Haenk.

1: 193. 1830, non Spreng. *S. tatora* Kunth, Enum. Pl. 2: 166. 1837.

Guatemala; in wet soil or shallow water, at altitudes of 1,200–2,400 m. United States, Mexico, and South America.

Plants stout, often 1 m. high or more, the culms terete; leaves reduced to sheaths; involucre of a single short stout erect bract, appearing like a continuation of the culm; spikelets very numerous, brown, 5–12 mm. long; bristles barbellate; achene fuscous.

3. **Scirpus Olneyi** Gray, Bost. Journ. Nat. Hist. 5: 238. 1845.

Guatemala (shore of Laguna de Amatitlán, at 1,180 m.). United States, Mexico, and West Indies.

Plants perennial, the culms 0.5–2 m. high; leaf blades 2–12 cm. long, or the sheaths often bladeless; involucre of a single short erect bract; spikelets 3–12, 5–10 mm. long, dark brown; bristles 6, downwardly barbate; achene plano-convex, brown.

4. **Scirpus inundatus** (R. Br.) Poir. Encycl. Suppl. 5: 103. 1817. *Isolepis inundata* R. Br. Prodr. Fl. Nov. Holl. 1: 222. 1810.

Costa Rica, at 2,000–2,800 m. South America, Australia, and New Zealand.

Plants cespitose, the culms slender, 2–20 cm. high; leaves narrowly linear, shorter than the culms; bract one, much exceeding the spikelets; spikelets 2–14, 4–8 mm. long, castaneous; bristles none; achene yellowish brown.

Some or all of the spikelets usually are replaced by small plants that fall off and take root. The plant grows in Costa Rica in meadows or pastures or on open banks high in the mountains. Occasionally it is found in sphagnum bogs, and it is particularly plentiful in the acid volcanic sand and gravel about the crater of Poás Volcano. The plants frequently form dense tufts or cushions.

7. FUIRENA Rottb.

Plants perennial, with leafy triangular culms; spikelets many-flowered, terete, in terminal and axillary clusters, the scales spirally imbricate, awned, the lowest ones usually empty; flowers perfect; perianth of 3 ovate stipitate scales, these usually alternating with barbate bristles; stamens 3; style 3-cleft, deciduous; achenes 3-angulate, smooth, stipitate or sessile.—About 30 species, in the warmer regions of both hemispheres.

Clusters of spikelets few, usually 4–5; leaves short, less than 5 mm. wide, sparsely or densely pilose.....1. *F. incompleta.*

Clusters of spikelets numerous; leaves elongate, 8 mm. wide or more, glabrous or scabrous.

Inner scales of the perianth obovate, scarcely stipitate, scarcely thickened at the apex.....2. *F. umbellata.*

Inner scales of the perianth ovate-lanceolate or oval, conspicuously stipitate, much thickened at the apex.

Leaves glabrous or scabrous, 1–2 cm. wide.....3. *F. robusta.*

Leaves pilose, 5–8 mm. wide.....4. *F. bulbipes.*

1. **Fuirena incompleta** Nees in Mart. Fl. Bras. 2[1]: 107. 1843.

Guatemala; Panama; in wet soil, at altitudes of 1,000–1,300 m. South America.

Culms rather slender, about 60 cm. long; leaves stiff, 12 cm. long or less; spikelets 8–10 mm. long, the scales pubescent, aristate.

2. **Fuirena umbellata** Rottb. Descr. & Icon. 70. *pl. 19, f. 3.* 1773.

British Honduras; Guatemala; Honduras; Salvador; Costa Rica; Panama; in wet soil near sea level. Found in tropical regions of both hemispheres.

Plants with creeping rhizomes; culms 0.5–1.5 m. long, stout, sometimes pilose above; leaves 25 cm. long or less, 8–15 mm. wide, usually scabrous; spikelets 1 cm. long, the scales pubescent, aristate; achene pale brown.

3. **Fuirena robusta** Kunth, Enum. Pl. 2: 185. 1837.

Panama (Chagres). Cuba; South America.

Culms stout, glabrous or nearly so; leaves elongate, 1–2 cm. wide, scabrous; spikelets very numerous, 1–1.5 cm. long, the scales pubescent.

The species was collected in Panama in 1850 by Fendler, but it has not been found there by more recent collectors.

4. **Fuirena bulbipes** Blake, Contr. U. S. Nat. Herb. 24: 2. 1922.

Type from Cristina, Department of Izabal, Guatemala, near the Atlantic coast.

Culms bulbous-thickened at the base, 60–70 cm. long, hispid-pilose below; leaves 4–14 cm. long; spikelets numerous, 5–6 mm. long, acutish, the scales mucronate; inner scales 3-nerved, obovate-oval, with a slender incurved awn at the apex; achene broadly obovoid, trigonous, pale brown, lustrous.

8. ASCOLEPIS Nees

A genus of 6 species, in South America and Africa.

1. **Ascolepis brasiliensis** (Kunth) Benth. ex Clarke in Durand & Schinz, Consp. Fl. Afr. 5: 651. 1895. *Platylepis brasiliensis* Kunth, Enum. Pl. 2: 269. 1837.

Panama, in wet meadows at about 1,250 m. South America and Africa.

Plants perennial, tufted, glabrous, the culms 20–50 cm. high, slender; leaves basal, stiff, much shorter than the culms, erect, about 1 mm. wide; spikelets 1–3, sessile, terete, subtended by 2 long linear bracts, ovoid, obtuse, 6–12 mm. long; scales narrowly lanceolate, the inner ones hyaline, connate, obcompressed, forming an ovate-rounded, abruptly short-acuminate utricle; style bifid; achene oblong, compressed.

9. LIPOCARPHA R. Br.

1. **Lipocarpha maculata** (Michx.) Torr. Ann. Lyc. N. Y. 3: 288. 1836. *Kyllinga maculata* Michx. Fl. Bor. Amer. 1: 29. 1803. *Hypaelyptum sphacelatum* Vahl, Enum. Pl. 2: 283. 1806. *L. sphacelata* Kunth, Enum. Pl. 2: 267. 1837.

Guatemala; Honduras; Salvador; Panama; in wet soil, often in sand, ranging from sea level to 1,400 m. Widely distributed in the tropics of both hemispheres.

Plants annual, the culms very slender, tufted, sulcate; leaves basal, 1 mm. wide or less, usually much shorter than the culms; bracts usually 2, 1–12 cm. long; spikelets in 2 terminal heads, broadly ovoid, very obtuse, terete, 4–6 mm. long; scales spirally imbricate, spatulate, usually brownish; bristles none.

10. HEMICARPHA Nees & Arn.

A genus of about 5 species, in both hemispheres.

1. **Hemicarpha micrantha** (Vahl) Pax in Engl. & Prantl, Pflanzenfam. 2^2: 105. 1887. *Scirpus micranthus* Vahl, Enum. Pl. 2: 254. 1806. *H. subsquarrosa* Nees in Mart. Fl. Bras. 2^1: 61. 1842.

Guatemala; Honduras; Salvador; Costa Rica; in moist soil, often in sand, ranging from sea level to 900 m. United States and Mexico; South America; Angola.

A slender tufted glabrous annual, 5–12 cm. high; leaves setaceous, mostly shorter than the culms; flowers perfect, the spikelets ovoid, many-flowered, in clusters of 2–4 or solitary, about 2 mm. long; bracts much longer than the spikelets; scales brown, spirally imbricate; perianth none; stamen 1; style 2-cleft; achene obovate, slightly compressed, pale brown.

11. MARISCUS (Hall.) Zinn.

A genus of about 40 species, widely distributed in tropical and temperate regions.

1. **Mariscus jamaicensis** (Crantz) Britton in Britt. & Brown, Illustr. Fl. 1: 348. 1913. *Schoenus Mariscus* L. Sp. Pl. 42. 1753. *Cladium jamaicense* Crantz, Inst. 1: 362. 1766. *C. Mariscus* R. Br. Prodr. Fl. Nov. Holl. 236. 1810. *Hypolytrum Kuntzeanum* Boeckl. Cyp. Nov. 1: 23. 1888.

British Honduras; Guatemala; Panama (according to Hemsley); ranging from sea level to an altitude of 1,400 m. Widely distributed in both hemispheres.

A coarse perennial 1–2.5 m. high, the culms obtusely triangular, leafy; leaves much elongate, 6–20 mm. wide, the margins finely serrulate; spikelets few-flowered, in large panicles, clustered, ovoid, 4–5 mm. long, the uppermost flower perfect; perianth none; stamens 2; achene ovoid, sharp-pointed, 2 mm. long, rugose.

Known in the southern United States by the name "sawgrass." The sharp sawlike edges of the coarse leaves cut the skin painfully if the plant is handled carelessly. In Florida the leaves are employed for weaving baskets and other articles.

12. REMIREA Aubl.

The genus consists of a single species.

1. **Remirea maritima** Aubl. Pl. Guian. 1: 45. *pl. 16*. 1775.

Honduras; Nicaragua (according to Hemsley); Panama (Chagres); in sand on seashores. Tropical regions of both hemispheres.

A glabrous perennial with long slender rhizomes; culms 5–25 cm. long, densely leafy; leaves erect or spreading, stiff, 8 cm. long or less; bracts 2–6, 6 cm. long or less, similar to the leaves; spikelets densely spicate, 1-flowered, the spikes ovoid, 1–2 cm. long, stramineous or fuscous; scales 4; bristles none; stamens 3; style usually 3-cleft; achene sessile, smooth.

The plant often forms dense tufts that are well protected by the very numerous, stiff, sharp-pointed leaves. The roots extend deeply into the sand.

13. DICHROMENA Michx.

Plants perennial; spikelets few, compressed, several- to many-flowered, in a dense terminal head, surrounded by an involucre of bracts, these often white at the base; scales spirally imbricate, some of them empty or with imperfect flowers; perianth none; stamens 3; style 2-cleft; achene lenticular, transversely rugose, capped by the persistent style base (tubercle).—About 20 species, in the Western Hemisphere.

Leaves 5–12 mm. wide; bracts green at the base.....1. *D. Watsoni.*

Leaves 2–4 mm. wide; bracts sometimes whitish.

Plants with fibrous roots; scales thin, brownish; bracts green throughout.....2. *D. radicans.*

Plants with rhizomes; scales firm, white; bracts white within the base.....3. *D. ciliata.*

1. **Dichromena Watsoni** Britton, Bull. Torrey Club 15: 101. 1888.

Guatemala; Nicaragua; Costa Rica; Panama; in forest at low elevations, along the Atlantic coast; type collected in Guatemala.

Culms stout, tufted, 40–60 cm. high, leafy; leaves 15–20 cm. long, glabrous; bracts about 9, resembling the leaves; spikelets about 9, brown, 12–15 mm. long; achene obovoid, with a broad depressed tubercle.

2. **Dichromena radicans** S. & C. Linnaea 6: 38. 1831. *D. pubera* Vahl, Enum. Pl. 2: 241, in part. 1806.

British Honduras; Guatemala; Honduras; Salvador; Nicaragua; Costa Rica; Panama; in wet soil, ascending to 1,300 m. Widely distributed in tropical America.

Culms densely tufted, 20–50 cm. high; leaves numerous, equaling or shorter than the culms, glabrous or pubescent; bracts ciliate at the base, elongate; spikelets 1–5, pointed, 1 cm. long or less.

The plants sometimes are proliferous. This is one of the common weedy sedges of Central America, occurring plentifully as a weed in waste or cultivated ground.

3. **Dichromena ciliata** Vahl, Enum. Pl. 2: 240. 1806. *D. nervosa* Vahl, op. cit. 241, in part. 1806.

British Honduras; Guatemala; Honduras; Salvador; Costa Rica; Panama; in moist soil, ascending to 1,400 m. Widely distributed in tropical America.

Culms 10–70 cm. high, slender; leaves 10–30 cm. long, glabrous or pilose; bracts 4–6, usually ciliate toward the base, 12 cm. long or less; spikelets 3–15, 1 cm. long or less, the scales often scabrous along the keel; achene 1 mm. long, ovoid-lanceolate, transversely rugose, brown or black.

Called "junco menudo" and "clavo" in Panama.

14. RYNCHOSPORA Vahl

Plants mostly perennial, sometimes annual, the culms 3-angulate or terete; spikelets oblong or fusiform, variously arranged, the scales 1-nerved, spirally imbricate; upper flowers staminate, the lower perfect; perianth of bristles, or sometimes wanting; stamens usually 3; style 2-cleft or rarely entire; achene lenticular or turgid, smooth or transversely rugose, capped by the persistent style base.—About 200 species, widely distributed, especially in warm regions.

The generic name is written *Rhynchospora* by some authors.

Spikelets all crowded in a single dense head.

Bracts 10–30 cm. long; leaves 8–15 mm. wide....1. *R. cephalotes.*

Bracts 4 cm. long or less; leaves 3 mm. wide or narrower.

Plants glabrous; bracts not ciliate.....2. *R. globosa.*

Plants pubescent; bracts ciliate.

Bracts partly leaflike; outer spikelets reflexed or spreading. 3. *R. barbata.*

Bracts all thin and scarious; spikelets all erect. 4. *R. armerioides.*

Spikelets variously arranged but never in a single head.

Branches of the style equaling or longer than the undivided portion.

Bristles present.

Spikelets mostly solitary.....5. *R. marisculus.*

Spikelets fasciculate in the corymbs.....6. *R. glauca.*

Bristles none.

Achenes smooth.

Spikelets about 9 mm. long.....7. *R. longispicata.*

Spikelets 2–3 mm. long.....8. *R. Clarkei.*

Achenes reticulate or transversely rugose.

Spikelets 1–1.5 mm. long.....9. *R. micrantha.*

Spikelets 3–10 mm. long.

Achenes reticulate.....10. *R. hirsuta.*

Achenes transversely rugose.

Nutlets 1–2 in each spikelet.

Spikelets 2–5.....11. *R. Berterii.*

Spikelets numerous.

Achene not tridentate at the apex..12. *R. tenuis.*

Achene tridentate at the apex.....13. *R. setacea.*

Nutlets 3 or more in each spikelet.

Base of the style depressed, almost discoid; scales very acute.....14. *R. eximia.*

Base of the style pyramidal; scales obtuse. 15. *R. robusta.*

Branches of the style short or none, much shorter than the undivided portion.

Spikelets in globose heads or headlike cymes.

Spikelets in globose heads 1 cm. in diameter.16. *R. cyperoides.*

Spikelets in headlike cymes 2–2.5 cm. in diameter. 17. *R. Torresiana.*

Spikelets not in globose heads or headlike cymes.

Spikelets fasciculate, yellow or yellow-brown. 18. *R. corymbosa.*

Spikelets mostly solitary, greenish or chestnut-brown.

Inflorescence much shorter than the basal leaves; leaves silvery.....19. *R. argentea.*

Inflorescence much surpassing the basal leaves; leaves green.

Bristles obsolete or nearly so.

Spikelets about 4 mm. long.....20. *R. polyphylla.*

Spikelets 6–9 mm. long.....21. *R. Schiedeana.*

Bristles equaling or longer than the achene.

Spikelets green or greenish.

Spikelets 3–4 mm. long.....22. *R. locuples.*

Spikelets 7–8 mm. long.....23. *R. aristata.*

Spikelets dark brown.

Achene about 1 mm. long, shorter than the bristles. 24. *R. vulcani.*

Achene about 2.5 mm. long, equaling the bristles. 25. *R. macrochaeta.*

1. **Rynchospora cephalotes** (L.) Vahl, Enum. Pl. 2: 237. 1806. *Scirpus cephalotes* L. Sp. Pl. ed. 2. 76. 1762.

British Honduras; Guatemala; Honduras; Costa Rica; Panama; in moist soil, at 300 m. or less. Mexico; Jamaica; South America.

Plants with rhizomes, coarse, usually 1 m. high or more, the culms leafy, leaves 40 cm. long or less, 4–12 mm. wide, glabrous or nearly so; spikelets greenish, 50–100, collected in a dense ovoid head 2–4 cm. long; bracts large and leaflike; spikelets about 7 mm. long; bristles 6, longer than the achene; achene 1.5 mm. long, reticulate, castaneous, the beak longer than the body.

In Panama this species is sometimes given the name of "paja macho de monte," that is, tapir grass. It is a characteristic plant of thickets and forests.

2. **Rynchospora globosa** (HBK.) R. & S. Syst. Veg. 2: 89. 1817. *Chaetospora globosa* HBK. Nov. Gen. & Sp. 1: 230. 1815.

Guatemala; Costa Rica; Panama; in dry fields, at 1,000 m. or less. Cuba; South America.

Plants glabrous or nearly so, 30–90 cm. high, in small dense tufts; leaves basal, 15–50 cm. long, 5 mm. wide or less, stiff and rigid, brown and indurate below; heads globose, 1–2 cm. in diameter; one of the bracts longer than the head, the others shorter; spikelets brownish, the scales rigid; bristles 5–6; achene fuscous, with a short beak.

Rynchospora epiglobosa Clarke (Kew Bull. Add. Ser. 8: 34. 1908), described from British Honduras, is closely related and perhaps not distinct.

3. **Rynchospora barbata** (Vahl) Kunth, Enum. Pl. 2: 290. 1837. *Schoenus barbatus* Vahl, Eclog. Amer. 2: 4. 1798.

Honduras; Panama; on dry hillsides and savannas, sometimes in pine forest, ascending to 1,300 m. Northern South America.

Plants in small dense tufts, the culms slender, 15–40 cm. high; leaves basal, pilose, usually much shorter than the culms, 1–2 mm. wide; heads globose, about 1 cm. in diameter, brownish, the bracts 4 cm. long or less; bristles twice as long as the achene, the latter broadly winged.

4. **Rynchospora armerioides** Presl, Rel. Haenk. 1: 197. *pl. 31, f. 2.* 1825.

Costa Rica; Panama; in savannas, at 460 m. or less; type from Panama. South America.

Culms tufted, 8–20 cm. high; leaves basal, shorter than the culms, more or less ciliate, 2–3 mm. wide; heads nearly 1 cm. high, pale brownish.

5. **Rynchospora marisculus** Nees, Linnaea 9: 297. 1834. *Rynchospora jubata* Liebm. Dansk. Vid. Selsk. Skrivt. 2: 66. 1849.

Guatemala; Costa Rica; in swamps, at 1,100 to 1,800 m. Southern Mexico, West Indies, and South America.

Plants glabrous, 0.5–1 m. high, with short rhizomes, the culms slender, leafy; leaves 20–40 cm. long, 4–6 mm. wide; inflorescence lax, much branched, the spikelets 5–7 mm. long, brown; bristles about 7, much longer than the achene, the latter transverse-undulate.

6. **Rynchospora glauca** Vahl, Enum. Pl. 2: 233. 1806. *R. Durandiana* Boeckl. Allgem. Bot. Zeitschr. 2: 94. 1896.

Guatemala; Honduras; Costa Rica; in moist soil, sometimes in pine forest or in sphagnum bogs, at 900–2,700 m. Tropics of both hemispheres.

Plants glabrous, with short rhizomes, 20–80 cm. high, the culms leafy; leaves 50 cm. long or less, 2–4 mm. wide; corymbs 1–2 cm. broad, the spikelets 3 mm. long, brown; bristles 6, slightly longer than the achene, this castaneous, undulate, short-beaked.

Rynchospora Schaffneri Boeckl. (Linnaea 37: 575. 1873) does not appear to differ essentially, at least as concerns the Central American specimens so determined by Clarke.

7. **Rynchospora longispicata** Boeckl. Linnaea 37: 600. 1873.

Costa Rica (Laguna de Buenos Aires, alt. 200 m.). West Indies and South America.

Plants glabrous, with short rhizomes, the culms very slender, 30–40 cm. long; leaves about equaling the culms, 1–2 mm. wide, stiff; corymbs lax, the spikelets few, yellowish brown; bristles none; achene smooth, brown, short-beaked.

8. **Rynchospora Clarkei** Rose, Contr. U. S. Nat. Herb. 10: 464. 1908. *Rynchospora Pringlei* Clarke, Kew Bull. Add. Ser. 8: 89. 1908, non Greenm. 1903.

Costa Rica (savannas, Buenos Aires, alt. 200 m.); Panama. Mexico.

Plants annual, densely tufted, slender, 4–8 cm. high, glabrous; leaves about 1 mm. wide; corymbs very small, the spikelets few, brownish, containing 1–4 achenes; achenes 0.5 mm. long, smooth, greenish.

9. **Rynchospora micrantha** Vahl, Enum. Pl. 2: 231. 1806.

British Honduras; Guatemala; Salvador; Panama; near sea level. Tropical and subtropical America; western Africa.

Plants annual, slender, 10–50 cm. high, the culms leafy; leaves 20 cm. long or less, 2–3 mm. wide; corymbs lax, with very slender, spreading branches, the spikelets numerous, greenish; bristles none; achene minute, yellowish brown, transversely rugose, short-beaked.

10. **Rynchospora hirsuta** Vahl, Enum. Pl. 2: 231. 1806. *Schoenus hirsutus* Vahl, Eclog. Amer. 1: 6. 1796.

Panama; in savannas, near sea level. Cuba; northern South America.

Plants with fibrous roots, 10–30 cm. high, pilose or glabrous, the culms slender, leafy; leaves equaling or shorter than the culms, 2–3 mm. wide; corymbs 2–4 cm. broad; spikelets numerous, 4 mm. long, brown or castaneous; bristles none; achene coarsely reticulate, yellow-brown.

11. **Rynchospora Berterii** (Spreng.) Clarke in Urban, Symb. Antill. 2: 119. 1900. *Hypolytrum Berterii* Spreng. Neue Entd. 1: 241. 1820.

British Honduras, near sea level. Greater Antilles.

Plants very slender, with short stolons and rhizomes, 10 cm. high or less; leaves 2–15 cm. long, 1 mm. wide, glabrous or pilose near the base; spikelets 2–5, fasciculate-spicate at the apex of the culm, 2–4 mm. long, lanceolate; scales 6–7, only 1 or rarely 2 fertile, whitish; bristles none; achene globose, sessile, transversely undulate, brown or nearly black, the beak half as long as the achene, conic, blackish.

12. **Rynchospora tenuis** Link, Jahrb. 3: 76. 1820.

Guatemala (near Huehuetenango, at 1,950–2,400 m.); Honduras (in wet meadow and on open banks at 1,100–1,400 m.). Mexico, West Indies, and South America.

Plants glabrous, 10–30 cm. high, with very short rhizomes, slender; leaves equaling or shorter than the culms, 1–3 mm. wide; corymbs axillary and terminal, 1–4 cm. broad; spikelets numerous, 3–4 mm. long, pale; bristles none; achene 1 mm. long, brownish, transversely rugose, the tubercle short and broad.

13. **Rynchospora setacea** (Berg) Boeckl. Vid. Medd. Kjobenhavn 1869: 159. 1870. *Schoenus setaceus* Berg, Act. Helv. 7: 130. *pl. 9.* 1772. *R. tenerrima* Spreng. Syst. Veg. Cur. Post. 26. 1827.

Panama (Chepo, in dry fields). West Indies and South America.

Plants slender, glabrous, 10–30 cm. high, with fibrous roots, the culms leafy; leaves 10–15 cm. long, 1–2 mm. wide; corymbs dense, the spikelets few, 4 mm. long, pale; bristles none; achenes 1 mm. long, transversely undulate, brown, the beak very short.

14. **Rynchospora eximia** (Nees) Boeckl. Linnaea 37: 601. 1873. *Spermodon eximius* Nees in Seem. Bot. Voy. Herald 222. 1854.

Honduras; Panama; in wet fields or bogs, ranging from sea level to 1,400 m.; type from Panama. Mexico; Cuba.

Plants glabrous, 10–45 cm. high, with fibrous roots, the culms leafy; leaves often exceeding the culms, 2–3 mm. wide; corymbs open, the spikelets numerous, 7–10 mm. long, dark brown, long-pedicellate; bristles none; achenes yellow-brown, transversely undulate, the beak very short.

This species was reported from Costa Rica by Clarke, but the specimen of the cited collection seen by the writer is *Fimbristylis diphylla.*

15. **Rynchospora robusta** (Kunth) Boeckl. Linnaea 37: 616. 1873. *Dichromena robusta* Kunth, Enum. Pl. 2: 283. 1837.

Guatemala; Costa Rica; Panama; in swamps, at 1,000 to 1,300 m. Southern Mexico; South America.

Plants glabrous, 0.6–1 m. high or larger, with short rhizomes, the culms leafy; leaves shorter than the culms, about 6 mm. wide; cymes large and broad, the spikelets numerous, 7 mm. long, brown; bristles none.

16. **Rynchospora cyperoides** (Sw.) Mart. Denkschr. Akad. Wiss. Muenchen 6: 149. 1816–17. *Schoenus cyperoides* Sw. Prodr. Veg. Ind. Occ. 19. 1788. *R. polycephala* Wydler ex Kunth, Enum. Pl. 2: 291. 1837.

British Honduras; Guatemala; Costa Rica; Panama; in savannas or along shores and stream banks, near sea level. Mexico, West Indies, and South America; tropical Africa.

Plants glabrous or nearly so, 20–80 cm. high, with short rhizomes; leaves longer or shorter than the culms, 2–5 mm. wide; heads 1–25, laxly paniculate, about 1 cm. in diameter, brown; bristles 6, slightly shorter than the achene, the latter 1 mm. long, smooth or transversely undulate, brownish, the beak equaling the achene.

17. **Rynchospora Torresiana** Britt. & Standl. ex Standl. Journ. Washington Acad. Sci. 15: 473. 1925.

Known only from the region of the type locality, in wet forest at El Muñeco, south of Navarro, Province of San José, Costa Rica, at 1,400 m.

Plants erect, 1–2 m. high; leaves 9–13 mm. wide, pale green, the margins scaberulous; spikelets sessile or nearly so, very numerous, in dense headlike cymes 2–2.5 cm. in diameter, the heads few, solitary on long, slender, axillary and terminal peduncles, rarely sessile, sometimes in clusters of 3 on the peduncle; spikelets 1 cm. long, pale greenish; bristles 4, slightly shorter than the achene, antrorse-scaberulous; achene obovoid-orbicular, plano-convex, 2.5–3 mm. long, pale brownish, finely reticulate, rounded at the apex, the beak 4–5 mm. long, green, its base one-third as broad as the achene.

18. **Rynchospora corymbosa** (L.) Britton, Trans. N. Y. Acad. Sci. 11: 85. 1892. *Scirpus corymbosus* L. Amoen. Acad. 4: 303. 1788. *R. aurea* Vahl, Enum. Pl. 2: 229. 1806. *?R. orizabensis* Clarke ex Britton, Trans. N. Y. Acad. Sci. 11: 85. 1892.

Guatemala; Nicaragua; Costa Rica; Panama; in swamps or moist soil, ascending to 1,290 m. Tropical regions of both hemispheres.

Plants glabrous or nearly so, stout, often 1 m. high or more, with fibrous roots; leaves 30–60 cm. long, 1–1.5 cm. wide; panicles 40 cm. long or less, dense, the spikelets very numerous, 6–10 mm. long, containing a single achene; bristles 6, longer than the achene, upwardly scabrous; achene 2–3 mm. long, smooth or rugose, blackish, the beak equaling the achene.

Called "navajuela" in Mexico.

19. **Rynchospora argentea** Standl. Contr. U. S. Nat. Herb. 18: 87. 1916.

Type from Puerto Obaldía, San Blas Coast, Panama.

Culms naked, very slender and weak, 20 cm. high or less; leaves 30–40 cm. long, 2–3 cm. wide, glabrous; corymbs small, the spikelets few, pale, 7 mm. long, solitary, pedicellate; bristles 6, white.

20. **Rynchospora polyphylla** Vahl, Enum. Pl. 2: 230. 1806. *Schoenus polyphyllus* Vahl, Eclog. Amer. 2: 5. 1798. *R. costaricensis* Boeckl. Allgem. Bot. Zeitschr. 2: 110. 1896.

Guatemala; Honduras; Salvador; Nicaragua; Costa Rica; Panama; in moist soil, often in forests, ascending to 2,000 m. Mexico, West Indies, and northern South America.

Plants glabrous or pubescent, with slender rhizomes, the culms very leafy, often 1 m. long, weak and often reclining; leaves usually equaling the culms, 4–7 mm. wide; panicles elongate, narrow, the spikelets very numerous, pale; achene 1 mm. long, reticulate, castaneous, the beak about as long as the achene.

21. **Rynchospora Schiedeana** Kunth, Enum. Pl. 2: 300. 1837. *R. Schiedeana* var. *varica* Clarke, Contr. U. S. Nat. Herb. 10: 463. 1908. *?R. Tuerckheimii* Clarke ex Britton, Trans. N. Y. Acad. Sci. 11: 85. 1892.

Guatemala; Costa Rica; at 1,300 to 1,800 m. Mexico.

Plants about a meter high, nearly glabrous, the culms very leafy; leaves 5–15 mm. wide; panicles elongate, the spikelets numerous, pale; achene smooth, with long beak.

22. **Rynchospora locuples** Clarke, Bot. Jahrb. Engler 34: Beibl. 78: 5. 1904.

Type from Copey, Costa Rica, at 1,800 m. Also in Colombia.

Plants about a meter high, nearly glabrous, the culms stout, leafy; leaves 12–17 mm. wide; panicles very large, the spikelets extremely numerous, pale, maturing a single achene; achene 1–1.5 mm. long, pale, reticulate, the beak longer than the achene.

23. **Rynchospora aristata** Boeckl. Flora 40: 36. 1873.

Guatemala; Nicaragua; mountain regions. Jamaica, Mexico, and northern South America.

Plants glabrous or nearly so, up to 1 m. high, the culms leafy, the rootstocks short and thick; leaves 5–12 mm. wide; panicles elongate, the spikelets numerous; bristles 3–5, equaling the achene, the latter smooth, dark brown, with elongate beak.

24. **Rynchospora vulcani** Boeckl. Linnaea 37: 638. 1873. *R. Pittieri* Boeckl. Allgem. Bot. Zeitschr. 2: 109. 1896.

Costa Rica, in the higher mountains at 2,000–3,000 m.; type from Volcán de Barba.

Plants glabrous or nearly so; leaves 4–6 mm. wide; panicle of 3–4 pedunculate corymbs, the spikelets numerous; bristles 4–5; achene smooth or obscurely rugulose, the beak shorter than the achene.

25. **Rynchospora macrochaeta** Steud. in Lechler, Berber. Amer. Centr. 56. 1857. *R. Hoffmanni* Boeckl. Linnaea 37: 637. 1873.

Costa Rica; Panama; high peaks, at 2,000 to 3,000 m. South America.

Plants glabrous or nearly so, about 1 m. high, with short rootstocks, the culms stout, leafy; panicles of few corymbs, the spikelets numerous, 6–8 mm. long; bristles 4–6; achene smooth, minutely reticulate, brown or pale, the beak equaling or longer than the achene.

15. SCLERIA Berg

Annuals or perennials, with leafy culms; spikelets small, clustered, spicate or paniculate; flowers monoecious, the staminate and pistillate in the same or separate clusters; pistillate spikelets 1-flowered, the staminate many-flowered, the scales spirally imbricate; perianth none; style 3-cleft, deciduous; achene globose or ovoid, obtuse, hard and bonelike, usually subtended at the base by a disk.—About 200 species, widely distributed in temperate and tropical regions.

Spikelets not all unisexual, some of the pistillate ones with staminate flowers.

Spikelets in a simple spike.

Plants perennial, with rhizomes.....1. *S. hirtella.*

Plants annual, with fibrous roots.....2. *S. verticillata.*

Spikelets paniculate.

Achene very rugose.....3. *S. Liebmanni.*

Achene smooth.

Inflorescence long-exserted; achenes 1.5 mm. long and as broad, nearly truncate at the apex.....4. *S. Purdiei.*

Inflorescence little exserted; achenes 2.5 mm. long, much longer than broad, rounded at the apex.5. *S. lithosperma.*

Spikelets all unisexual.

Margin of the disk (beneath the achene) laciniate or ciliate.

Margin of the disk laciniate.

Achenes tuberculate.....6. *S. panicoides.*

Achenes smooth.

Achenes white.....7. *S. latifolia.*

Achenes purplish.....8. *S. arundinacea.*

Margin of the disk ciliate.

Achene 5–6 mm. long; leaves 1.5–5 cm. wide.9. *S. paludosa.*

Achenes less than 3 mm. long; leaves 0.5–2 cm. wide.

Disk long-ciliate with very numerous dark hairs; style base black or nearly so.....10. *S. mitis.*

Disk short-ciliate with few whitish hairs; style base light brown.....11. *S. microcarpa.*

Margin of disk neither laciniate nor ciliate.

Achenes tuberculate or reticulate.

Plants with fibrous roots; achenes glabrous....12. *S. setacea.*

Plants with rootstocks; achenes pubescent....13. *S. bracteata.*

Achenes smooth.

Achenes 3–5 mm. long.

Branches of the inflorescence hirsute.....14. *S. secans.*

Branches of the inflorescence scaberulous.

Disk subentire, the margin reflexed.....15. *S. lacustris.*

Disk 3-lobate, margin not reflexed.16. *S. setuloso-ciliata.*

Achenes 2.5 mm. long or less.

Achenes white.....17. *S. pterota.*

Achenes chestnut or purple.....18. *S. melaleuca.*

1. **Scleria hirtella** Sw. Prodr. Veg. Ind. Occ. 19. 1788.

Guatemala; Costa Rica; Panama; in meadows and on open hillsides, ascending to 1,300 m. Widely distributed in tropical America; Africa.

Plants pubescent, with slender rhizomes, the culms slender, 20–60 cm. long or more; leaves 2–4 mm. wide; spikes 5–20 cm. long, the spikelets hispidulous, in remote clusters; achene 1 mm. long, smooth, white, contracted below.

Clarke (Contr. U. S. Nat. Herb. 10: 466. 1908) reported a collection of *S. distans* Poir. from Costa Rica, but the fragmentary specimen in the United States National Herbarium of the number cited seems to belong rather to *S. hirtella*.

2. **Scleria verticillata** Muhl. ex Willd. Sp. Pl. 4: 317. 1805.

Honduras, in open pine forest at 1,300 m. Mexico, Cuba, and the southeastern United States.

A slender low annual, 60 cm. high or less; leaves about 1 mm. wide, shorter than the culm, the lower very short, the sheaths sometimes pubescent; spikelets in several separated clusters, forming a usually simple spike; achene globose, 1 mm. in diameter, with sharp transverse ridges or somewhat reticulate.

3. **Scleria Liebmanni** Steud. Syn. Pl. Glum. 2: 179. 1855. *Hypoporum micrococcum* Liebm. Dansk. Vid. Selsk. Skrivt. V. 2: 255. 1851. *S. costaricensis* Boeckl. Allgem. Bot. Zeitschr. 2: 157. 1896.

British Honduras; Costa Rica; Panama; in swamps and savannas at low elevations. Mexico, Cuba, and South America.

Plants annual, pubescent below, very slender, the culms 20–30 cm. long; leaves 1–2 mm. wide; panicles about 10 cm. long, the spikelets in small sessile clusters, the bracts shorter than the spikelets; achenes 1 mm. long, white.

This species was reported from Panama by Nees (in Seem. Bot. Voy. Herald 223. 1854) as *Hypoporum verticillatum*, and by Hemsley as *Scleria verticillata* Muhl.

4. **Scleria Purdiei** Clarke, Kew Bull. Add. Ser. 8: 57. 1908. *S. Hitchcockii* Standl. Contr. U. S. Nat. Herb. 18: 88. 1916.

Panama (El Boquete, on grassy hillside, at 1,000 m.). Colombia and Venezuela.

Plants slender, 50–70 cm. high; leaves 12–18 cm. long, 2–4 mm. wide, nearly glabrous; panicles about 10 cm. long, the branches very slender; spikelets sessile in small dense clusters; achene globose, 1.2 mm. in diameter, white, glabrous, the disk fused with the achene as a short stipe.

5. **Scleria lithosperma** (L.) Sw. Prodr. Veg. Ind. Occ. 18. 1788. *Scirpus lithospermus* L. Sp. Pl. 51. 1753.

Costa Rica; Panama; in moist soil, ascending to about 1,000 m. Tropical regions of both hemispheres.

Plants glabrous or nearly so, with stout rootstocks, the culms 30–90 cm. long; leaves 10–30 cm. long, 3–6 mm. wide; panicles sparsely branched, the spikelets in distant sessile clusters; achenes smooth, white, glabrous, the disk fused with the base and nearly obsolete.

6. **Scleria panicoides** Kunth, Enum. Pl. 2: 348. 1837.

Panama (Empire Station). South America; type from Brazil.

Culms 30–60 cm. high, scabrous on the angles; leaves about 30 cm. long and 2.5 cm. wide, pubescent beneath; panicle branches hirtous; bracts elongate; achene globose, hirtellous.

It is probable that the oldest name for this species is *Scleria foveolata* Cav. (Icon. Pl. 5: 35. 1799), which was based on specimens collected on flats near Ancón Hill, Canal Zone.

7. **Scleria latifolia** Sw. Prodr. Veg. Ind. Occ. 18. 1788.

Guatemala (Cobán, border of forest, at 1,300 m.); Costa Rica. Lesser Antilles; Venezuela.

Plants stout, 1 m. high or more; leaves 40–60 cm. long, 3–5 cm. wide, the sheaths broadly 3-winged; panicles 40 cm. long or less; achene globose, 3 mm. in diameter, the disk 3-lobate.

8. **Scleria arundinacea** Kunth, Enum. Pl. 2: 347. 1837.

British Honduras; Guatemala; Costa Rica; Panama; in swamps at chiefly low elevations, ascending to 900 m. Lesser Antilles; South America.

Plants large and coarse, 1–2 m. high; leaves 2.5–5 cm. wide, glabrous, scabrous on the margins, the sheaths broadly 3-winged; panicles large and much branched, puberulent; achenes 3 mm. in diameter, globose, smooth.

It is doubtful whether this is more than a mere form of *S. latifolia*, separable only by the color of the achenes. In Costa Rica the plant is called "navajuela," and in Venezuela "cortadera."

9. **Scleria paludosa** Kunth, Enum. Pl. 2: 344. 1837. *Ophryoscleria asperrima* Liebm. Dansk. Vid. Selsk. Skrivt. V. 2: 261. 1851. *S. asperrima* Steud. Syn. Pl. Glum. 2: 170. 1855. *S. macrocarpa* Salzm. Linnaea 38: 521. 1874.

Guatemala; Honduras; Nicaragua; Costa Rica; Panama; along streams or in ditches and swamps near sea level. Cuba; South America.

Plants stout, coarse, 1–2 m. high, glabrous except in the inflorescence, with stout rhizomes; leaves 20–40 cm. long, the sheaths 3-winged; panicles 20–40 cm. long, much branched; achenes ovoid, white or yellowish, smooth, the disk shallowly 3-lobate.

10. **Scleria mitis** Berg, Vet. Akad. Handl. Stockh. 26: 145. 1765.

Guatemala; Panama; in wet soil near sea level. West Indies and South America.

Plants stout and coarse, 1–2 m. high, nearly glabrous; leaves 30–50 cm. long, the sheaths 3-winged; panicles narrow, 50 cm. long or less, much branched; achenes globose-ovoid, white, the disk truncate.

Known in Cuba by the name "cortadera."

11. **Scleria microcarpa** Nees, Linnaea 9: 302. 1834.

Guatemala; Honduras; Panama; in marshes or wet soil, ascending to 350 m. West Indies and South America.

Plants stout, with horizontal rhizomes, about 1 m. high; leaves 20–30 cm. long, 8–11 mm. wide, the sheaths narrowly 3-winged; panicles narrow, 20–50 cm. long; achenes 1–2 mm. long, ellipsoid or ovoid, smooth, white, the disk subentire.

Called "cortadera" in Cuba and Porto Rico.

12. **Scleria setacea** Poir. in Lam. Encycl. 7: 4. 1806. *S. coriacea* Liebm. Dansk. Vid. Selsk. Skrivt. V. 2: 259. 1851. *S. hemitaphra* Steud. Syn. Pl. Glum. 2: 169. 1855.

Guatemala; Salvador; Costa Rica; Panama; chiefly on the Pacific slope, at 1,350 m. or less. Southeastern United States, Mexico, and the West Indies.

Plants with fibrous roots, glabrous or nearly so, 30–60 cm. high, slender; leaves 2–4 mm. wide, the sheaths very narrowly winged; panicles small, axillary, with elongate bracts; achenes 1.5–2 mm. long, subglobose, the disk with 3 small lobes.

In Salvador the name "navajuela" sometimes is applied to this species. The type of *S. coriacea* was collected in Guanacaste, Costa Rica.

13. **Scleria bracteata** Cav. Icon. Pl. 5: 34. *pl. 451*. 1799.

British Honduras; Guatemala; Costa Rica; Panama; in wet soil at 650 m. or less; type collected near Ancón, Panama. Southern Mexico and South America.

Plants coarse, about 1 m. high, with stout rhizomes, copiously pubescent; leaves about 1 cm. wide, with very scabrous margins, the sheaths scarcely winged; panicles axillary and terminal, the upper ones staminate, usually brownish, conspicuously bracteate; achenes 2 mm. long, globose, often purplish, the disk 3-lobate.

Called "navajuela" in Costa Rica, and in Panama "cortadera" and "cuchillito."

14. **Scleria secans** (L.) Urban, Symb. Antill. 2: 169. 1900. *Schoenus secans* L. Syst. Nat. ed. 10. 865. 1759. *Scleria reflexa* HBK. Nov. Gen. & Sp. 1: 232. 1816.

Guatemala; Costa Rica; Panama; in wet soil, chiefly in thickets, at 700 m. or less. Southern Mexico, West Indies, and South America.

Plants perennial, the culms long and weak, often reclining on shrubs or scandent to a height of 3 m. or more; leaves 4–7 mm. wide, stiff, very scabrous on the margins; panicles small, terminal and axillary, conspicuously bracteate, purplish or castaneous; achene smooth, white, globose, the disk subentire.

Called "navajuela" in Costa Rica. Both this species and *S. bracteata* are great pests in the regions where they occur abundantly, usually in swamps at low elevations. The stems often form impenetrable tangles, and the exceedingly sharp-edged leaves cut one's flesh mercilessly unless great care is exercised when in the vicinity of the plants.

15. **Scleria lacustris** C. Wright in Sauvalle, Fl. Cub. 185. 1873. *S. Tonduzii* Boeckl. Allgem. Bot. Zeitschr. 2: 160. 1896.

Costa Rica (Río Tuis, alt. 650 m.). South America; Cuba.

Plants large and coarse, nearly glabrous; leaves 60 cm. long and 11 mm. wide or smaller, the sheaths winged; panicles large, much branched, rigid, dense, purplish; achenes 3 mm. long, white or purplish, smooth.

16. **Scleria setuloso-ciliata** Boeckl. Flora 65: 30. 1882.

Guatemala; type from Mazatenango. Chiapas.

Plants stout, 0.5–1 m. high, tufted; leaves about 1 cm. wide, scabrous on the margins, the sheaths narrowly winged; panicles small, dense, with elongate bracts; achenes ovoid, smooth, whitish.

17. **Scleria pterota** Presl in Oken, Isis 21: 268. 1828. *S. pratensis* Nees in Mart. Fl. Bras. 2[1]: 179. 1842. *S. Pittieri* Boeckl. Allgem. Bot. Zeitschr. 2: 159. 1896.

Guatemala; Salvador; Costa Rica; Panama; in forests and thickets, at 500 m. or less. Mexico, West Indies, and South America.

Plants with short rhizomes, 30–80 cm. high, rather stout, nearly glabrous; leaves 30 cm. long and 1 cm. wide or smaller; panicles axillary, small, sparsely branched, green or brownish, the bracts inconspicuous; achene 2 mm. long, subglobose, the disk 3-lobate.

Known in Panama by the name "cortadera."

18. **Scleria melaleuca** S. & C. Linnaea 6: 29. 1831.

British Honduras; Guatemala; Honduras; Nicaragua; Costa Rica; Panama; in wet soil, chiefly in forest or thickets, at 900 m. or less. Widely distributed in tropical America.

Plants 30–80 cm. high, glabrous or nearly so, with rhizomes; leaves 20–30 cm. long, 1 cm. wide or less, the sheaths narrowly winged; panicles small, axillary, rigid, sparsely branched, purplish; achene 1.5–2 mm. long, subglobose, smooth, shining, the disk 3-lobate.

The name applied to the plant in Honduras is "navajuela." The species is one of the most common weedy sedges of Central America. The plant probably is only a color form of *S. pterota*, and worthy of recognition only as a variety of that species.

16. CALYPTROCARYA Nees

A genus of about 7 species, in tropical America.

1. **Calyptrocarya glomerulata** (Brongn.) Urban, Symb. Antill. 2: 169. 1900. *Becquerelia Calyptrocarya* Brongn. in Duperrey, Voy. Coquille 2: 163. 1829. *C. fragifera* Kunth, Enum. Pl. 2: 364. 1837. *C. palmetto* Nees in Mart. Fl. Bras. 2^1: 195.

British Honduras; Guatemala; Nicaragua; Costa Rica; Panama; in forests or swamps, at altitudes of 350 m. or less. Also in South America.

Plants perennial, with short thick rootstocks, leafy; culms 40 cm. high or less; leaves linear, 4–6 mm. wide, 3-nerved, usually longer than the culms, glabrous or nearly so, scabrous on the edges; spikelets capitate, in axillary corymbs; flowers unisexual; pistillate spikelet terminal, 1-flowered, without bristles, the staminate spikelets lateral, 1–4-flowered; stamen 1; style bifid; achene brownish, globose, puberulent, about 1 mm. long.

17. HYPOLYTRUM L. Rich.

A genus of about 25 species, in the tropics of both hemispheres.

1. **Hypolytrum nicaraguense** Liebm. Dansk. Vid. Selsk. Skrivt. 2: 47. 1849.

British Honduras; Guatemala; Nicaragua; Costa Rica (Cocos Island); Panama; type from Río San Juan, Nicaragua; growing near sea level, in swamps or on stream banks. Brazil.

Plants perennial, about 1 m. high, the culms triangular, stout, leafy; leaves linear, 3 cm. wide, the margins very scabrous; inflorescence corymbose-paniculate, many-flowered; flowers unisexual, the spikelets 3-flowered, the terminal flower pistillate; stamen 1; style bifid; achene ovoid, 2 mm. long.

18. DIPLASIA L. Rich.

The genus consists of a single species.

1. **Diplasia karataefolia** L. Rich. ex Pers. Syn. Pl. 1: 70. 1805.

Costa Rica (Palmitales de las Lomas del Silencio, Diquís Valley, alt. 600 m.). Trinidad, Guianas, and Brazil.

A coarse perennial, 1 m. high or more, the culms leafy, triangular; leaves up to 1 m. long and 5 cm. wide, very scabrous on the margins; flowers unisexual, 6–9 or more in each spikelet, the lower ones staminate, the terminal one pistillate; spikes numerous, umbellate-

paniculate, terete, 1.5–3 cm. long, 3 mm. thick, the scales ferruginous, very obtuse, indurate; stamen 1; style 2-cleft; achene 5 mm. long, ellipsoid, smooth, dark brown.

Called "zacatón" in Costa Rica.

For some reason unknown to the writer, whether by a slip of the pen or for some other cause, this plant was reported from Costa Rica by Clarke (Contr. U. S. Nat. Herb. 10: 461. 1908) as *Dulichium arundinaceum* (L.) Britton, a species to which it certainly bears little resemblance. Clarke's synonymy and description relate wholly to the latter plant.

19. MAPANIA Aubl.

Large coarse glabrous perennials; spikelets in dense ovoid spikes, these in dense terminal leafy-bracted heads; spikelets composed of 6 scales, the 2 lower staminate, the 3 above these sterile, the uppermost pistillate; style 2–3-cleft.—About 35 species, in the tropics of both hemispheres.

Basal leaves none.....1. *M. sylvatica.*

Basal leaves present.....2. *M. pycnocephala.*

1. **Mapania sylvatica** Aubl. Pl. Guian. 1: 47. *pl. 17.* 1775.

Costa Rica (Carillo, at 300 m.); Panama. Venezuela and the Guianas; type from French Guiana.

Culms 30–60 cm. long; bracts 3, as much as 14 cm. long and 6 cm. wide; spikes few, 1–2 cm. long, ferruginous; style trifid.

2. **Mapania pycnocephala** Benth. Journ. Linn. Soc. Bot. 15: 512. 1887. *Hypolytrum pycnocephalum* Benth. Bot. Voy. Sulph. 177. 1844.

Costa Rica (Carillo, at 300 m.). Venezuela and Colombia.

Culms 30–60 cm. long; basal leaves 30–40 cm. long, 2–3 cm. wide; bracts 3, large, resembling the leaves; heads 1–2 cm. broad, brown; style bifid.

20. UNCINIA Pers.

Perennials, the culms erect, leafy below; flowers unisexual, spicate; bracts 2, connate and forming a bicarinate utricle, this enclosing the ovary; a rudiment of a spikelet present in the utricle, setiform, the apex exserted and uncinate.—About 25 species, chiefly in the South Temperate Zone.

Spikes dense, 3 mm. in diameter; perigynia ciliate....1. *U. hamata.*

Spikes lax, 2 mm. in diameter; perigynia not ciliate....2. *U. tenuis.*

1. **Uncinia hamata** (Sw.) Urban, Symb. Antill. 2: 169. 1900. *Carex hamata* Sw. Prodr. Veg. Ind. Occ. 18. 1788. *U. jamaicensis* Pers. Syn. Pl. 2: 534. 1807. *U. mexicana* Steud. Syn. Pl. Cyp. 243. 1855.

Guatemala; Costa Rica; Panama; in virgin mountain forest, at 1,300–3,300 m. Jamaica; southern Mexico; South America.

Plants forming dense clumps, 30–60 cm. high; leaves 2–7 mm. wide; culms bearing a single spike, this 8–15 cm. long; utricles lanceolate; style 3-cleft; bristle more than twice as long as the utricle.

The plant is a very annoying one in the regions where it occurs abundantly, for the utricles adhere to one's clothes in great numbers by the hooked bristles, which are so sharp as to penetrate the flesh easily.

2. **Uncinia tenuis** Kunth, Enum. Pl. 2: 525. 1837.

Costa Rica (Volcán de Barba, alt. 2,500 m.). Ranging southward to Chile.

Plants slender, stoloniferous, about 30 cm. high; leaves equaling or longer than the culms, about 2 mm. wide; spikes 2.5–4 cm. long, the utricles glabrous.

21. CAREX L.

Contributed by Kenneth K. Mackenzie

Grasslike sedges, perennial by rootstocks; culms mostly triangular; leaves 3-ranked, the upper (bracts) elongate or short, and subtending the spikes of flowers or wanting; plants monoecious or sometimes dioecious; flowers solitary in the axils of scales (glumes); spikes one to many, either wholly pistillate, wholly staminate, androgynous or gynaecandrous; perianth none; staminate flowers of 3 (or rarely 2) stamens, the filaments filiform; pistillate flowers of a single pistil, with a style and 2–3 stigmas; achene triangular or lenticular, completely surrounded by the perigynium.—Species more than 1,000, widely distributed, most abundant in the temperate zones. In our area very largely confined to the higher altitudes, and only *Carex polystachya* and *Carex Donnell-Smithii* have been collected in any quantity.

Spikes sessile (short), forming an interrupted head; stigmas 2; achenes lenticular.

Perigynia with wing-margined body, broadest at the top. 1. *C. albolutescens.*

Perigynia with sharp-edged body, broadest towards the base.

Perigynia lanceolate, long-beaked, with the body nearly marginless, round-contracted at the base.....2. *C. Bonplandii.*

Perigynia ovate, shorter-beaked, with the body margined, rounded at the base.....3. *C. Purdiei.*

Spikes in panicles or the lower peduncled; stigmas 3 and achenes triangular (except in No. 8).

Spikes in panicles; very numerous.

Perigynia glabrous.

Perigynia 2.5–4 mm. long, the beak 1 mm. long; achenes 1.5–2 mm. long; scales 2–3 mm. long...4. *C. polystachya.*

Perigynia 4.5–5 mm. long, the beak 1.5 mm. long; achenes 3 mm. long; scales 3–4.5 mm. long....5. *C. Humboldtiana.*

Perigynia scabrous-pubescent.....6. *C. scabrella.*

Lateral spikes peduncled (at least the lower).

Perigynia finely pubescent.....7. *C. planostachys.*

Perigynia glabrous.

Lateral spikes staminate at the apex, much elongate, narrowly linear.

Stigmas 2.....8. *C. Lemanniana.*

Stigmas 3.....9. *C. Donnell-Smithii.*

Lateral spikes pistillate, oblong-cylindric ...10. *C. polysticha.*

1. **Carex albolutescens** Schwein. Ann. Lyc. N. Y. 1: 66. 1824. "*C. foenea* Willd." ex Ell. Bot. S. Car. 2: 533. 1824. *C. straminea* Schkuhr var. *foenea* Torr. Ann. Lyc. N. Y. 3: 395. 1836.

Guatemala (near Cobán, at 1,350 m.); Costa Rica (in bogs at 1,500–1,800 m.). Ranging from Massachusetts to northern South America.

Densely cespitose, the culms 30–80 cm. high, slender but stiff; leaf blades 2–3.5 mm. (rarely 4.5) mm. wide, the sheath green, striate ventrally nearly to the mouth; spikes 3–10, gynaecandrous, silvery-greenish or silvery-brownish, aggregated into a head 2–4 cm. long, the spikes ovoid, 6–10 mm. long, 4–6 mm. wide, obtusish, the perigynia numerous, appressed-ascending; scales ovate, obtusish, shorter than perigynia; perigynia very flat, plano-convex, 3–4 mm. long, 2 mm. wide, the body broadly obovate, strongly winged and serrulate, abruptly short-beaked, the beak one-third the length of the body, at length bidentate; achenes substipitate.

2. **Carex Bonplandii** Kunth, Enum. Pl. 2: 380. 1837. *C. heptastachya* Boeckl. Linnaea 39: 114. 1875. *C. Durandii* Boeckl. Allgem. Bot. Zeitschr. 2: 189. 1896.

Costa Rica, at 2,400–3,100 m. Also in the mountains of northern South America, extending as far south as Ecuador.

Rootstocks short-creeping, stout, lignescent; culms 25–50 cm. high, slender but stiff; leaf blades 1.5–2.5 mm. wide, the sheaths white-hyaline ventrally; spikes 4–12, aggregated into a head 1.5–3 cm. long, the terminal gynaecandrous, the lateral mostly pistillate, ovoid, 5–12 mm. long, with 6–20 appressed-ascending perigynia; scales ovate, shorter than perigynia, light brown, acute to short-cuspidate; perigynia lanceolate, plano-convex, 3–3.5 mm. long, 0.9–1.25 mm. wide, nearly nerveless ventrally, firm, narrowly sharp-edged to the round contracted base, serrulate above, tapering into the serrulate, shallowly bidentate beak shorter than the body; achenes short-stipitate.

3. **Carex Purdiei** Boott, Ill. Car. 1: 26. *pl. 67.* 1858.

Costa Rica, in the high mountains, at 2,000–3,000 m., on open wet banks, in paramos, and in sphagnum bogs. Mountains of northern South America, extending southward to Ecuador.

Rootstocks short-creeping, stout, lignescent; culms 25–80 cm. high, slender but stiff; leaf blades 1.5–3.5 mm. wide, the sheaths white-hyaline ventrally; spikes 6–12, aggregated into a head 2–4.5 cm. long, the terminal gynaecandrous, the lateral mostly pistillate, ovoid, 5–12 mm. long, with 6–20 appressed-ascending perigynia; scales ovate, shorter than perigynia, light brown, acutish; perigynia ovate, plano-convex, 3.5 mm. long, 1.5 mm. wide, nearly nerveless ventrally, thickish, sharp-margined to the rounded base, serrulate above, contracted into the serrulate, shallowly bidentate beak much shorter than the body; achenes short-stipitate.

Very closely related to *C. Bonplandii*. Central American specimens have been referred erroneously to *C. echinata* Murr., *C. tereti-uscula* Good., and *C. heptastachya* Boeckl.

4. **Carex polystachya** Sw. ex Wahl. Kongl. Akad. Handl. 24: 149. 1803. *C. cladostachya* Wahl. loc. cit. 1803. *C. mexicana* Presl, Rel. Haenk. 1: 204. 1830. *C. Hartwegii* Boott ex Benth. Pl. Hartw. 96. 1848. *C. acrolepis* Liebm. Dansk. Vid. Selsk. Skrivt. II. 5: 270. 1851. *C. Oerstedii* Liebm. op. cit. 272. 1851.

Guatemala; Salvador; Nicaragua; Costa Rica; in mountain thickets or forest, at 350–2,600 m. West Indies, Mexico, and northern South America.

Rootstocks woody; culms 25–60 cm. high; leaves numerous, clustered towards the base, the leaf blades thick, stiff, light green, long-attenuate, very rough, 2–7 mm. wide; spikes very many, in decompound panicles, androgynous, 5–9 mm. long, 3–4 mm. wide; scales ovate, many-striate, cuspidate to acute; perigynia narrowly obovoid, sharply triangular, not inflated, bright green, 2-keeled and many-nerved, stipitate, abruptly beaked, the beak strongly bidentate, half the length of the body or less.

This is by far the most abundant *Carex* of Central America, being, in fact, the only one that is of at all frequent occurrence. Usually it has been called *C. cladostachya*, but the name *C. polystachya* has page priority in publication. Both species were described from Jamaica.

5. **Carex Humboldtiana** Steud. Syn. Cyp. 208. 1855. *"C. polystachya* Sw." ex Kükenth. in Engl. Pflanzenreich IV. 20: 267. 1909. *C. macrosperma* Mackenzie, Bull. Torrey Club 36: 477. 1909.

Nicaragua; Costa Rica; Panama; in mountain forest at 1,200–1,800 m. Mexico, West Indies, and northern South America.

Rootstocks woody; culms 60–100 cm. high; leaves numerous, clustered towards the base, the leaf blades thick, stiff, light green,

long-attenuate, 2.5–6 mm. wide; spikes very many, in 6–10 erect peduncled panicles, androgynous, 5–10 mm. long, 4–6 mm. wide; scales ovate, many-striate, short-awned to obtuse; perigynia elliptic-obovoid, sharply triangular, not inflated, bright green, 2-keeled and obscurely nerved, stipitate, abruptly beaked, the beak shallowly bidentate, half the length of the body or less.

6. **Carex scabrella** Wahl. Kongl. Akad. Handl. 24: 149. 1803.

Guatemala (vicinity of Secanquím, Alta Verapaz, alt. 350 m.). West Indies.

Rootstocks stout; culms weak, 5–50 cm. high; leaves clustered near the base, the leaf blades light green, rather thin, long-attenuate, 0.5–1.5 mm. wide; spikes numerous, in about 5 spikelike panicles (the upper sessile, the lower long-peduncled), androgynous, with 3–6 ascending perigynia; scales ovate, acutish to awned, several-nerved; perigynia 3–4 mm. long, the body obovoid, sharply triangular, not inflated, prominently ribbed, subcoriaceous, tapering at the base, narrowed into a bidentate beak about 1 mm. long.

7. **Carex planostachys** Kunze, Suppl. Riedgr. 138. *pl. 35*. 1840–1850. *"C. Halleriana* Asso" ex Bailey, Proc. Amer. Acad. 22: 126. 1886. *C. Halleriana* subsp. *planostachys* Kunze ex Kükenth. in Engler, Pflanzenreich IV. 20: 488. 1909.

Guatemala, in dry soil near Chaculá, at 1,600 m. Northward through Mexico to northeastern Texas.

Rootstocks short, stout, branching; culms up to 20 cm. high, rough, brownish at the base; leaves clustered above the base, the leaf blades 1–2.5 mm. wide, long-attenuate, rough above; terminal spike staminate, linear, 8–12 mm. long, short-peduncled; lateral spikes pistillate, the upper 1 or 2 contiguous, sessile, the lower slender-peduncled, basal, oblong, 5–10 mm. long, 3–4 mm. wide, 6–12-flowered; scales lance-ovate, sharp-keeled, acute to cuspidate; perigynia obovoid-elliptic, 3.5 mm. long, not inflated, many-ribbed, light green, substipitate, abruptly beaked, the beak 0.5 mm. long, obliquely cut.

8. **Carex Lemanniana** Boott, Trans. Linn. Soc. 20: 121. 1846. *C. Lemanniana* var. *simplex* Kükenth. in Engl. Pflanzenreich IV. 20: 405. 1909. *"Carex pichinchensis* HBK." ex Boeckl. Linnaea 39: 147, in part. 1875.

Costa Rica, in the mountains at 2,000 m. or more. Extending southward in the mountains of South America to Ecuador.

Culms 25–60 cm. high, brownish at the base; leaves numerous, clustered near the base, the leaf blades 2.5–8 mm. wide, glaucous, coriaceous, stiff, long-attenuate; inflorescence not or but sparingly compound, the spikes usually 4–10, androgynous, linear-cylindric, 2–6 cm. long, 3.5–5 mm. wide, the pistillate part 20–40-flowered; scales lance-ovate, usually rough-awned, purplish black; perigynia oblong-ovate, 2.5 mm. long, 1 mm. wide, membranaceous, plano-convex, straw-colored and

strongly purplish-splashed, obscurely striate ventrally, finely several-nerved dorsally, serrulate above, rounded at the base, abruptly beaked, the beak straight, 0.5 mm. long, bidentate, the teeth short, scabrous within.

Central American material of this species has been confused with the South American species, *Carex pichinchensis* HBK. and *C. Jamesonii* Boott.

9. **Carex Donnell-Smithii** Bailey, Mem. Torrey Club 1: 56. 1889. *C. viridis* Boeckl. Linnaea 40: 330, in part. 1876, non Jungh. 1831. *C. Pittieri* Boeckl. Allgem. Bot. Zeitschr. 2: 190. 1896.

Guatemala; Honduras; Costa Rica; Panama; type from Pansamalá, Department of Alta Verapaz, Guatemala; in thickets or forest, sometimes in paramos or sphagnum bogs, at 1,000–3,000 m.

Culms stout, 30–100 cm. high, purplish at the base; leaves numerous, the lower clustered, the leaf blades 3–10 mm. wide, glabrous, coriaceous, stiff, long-attenuate; inflorescence compound, 20–60 cm. long, the lower branches in 2's or 4's, the upper simple; spikes numerous, androgynous, narrowly linear-cylindric, 3–12 cm. long, 3.5–5 mm. wide, the pistillate part rather loosely 20–50-flowered; scales lance-ovate, usually rough-awned, purplish black; perigynia lanceolate, 3.5–4 mm. long, membranaceous, dull green, scarcely inflated, puncticulate, 2-ribbed and strongly few-nerved, short-stipitate, abruptly beaked, the beak excurved, 1–1.5 mm. long, bidentate, the teeth stiffish, scabrous within.

Central American specimens of this species have been referred to *Carex Jamesonii* Boott, *C. Jamesonii* var. *gracilis* Bailey, *C. pichinchensis* HBK., and *C. viridis* S. & C.

10. **Carex polysticha** Boeckl. Vid. Medd. Kjobenhavn 57. 1869. *C. Underwoodii* Britton, Torreya 5: 10. 1905.

Guatemala, near Cobán, Alta Verapaz, at 1,350 m. Jamaica and Santo Domingo; widely distributed in South America.

Rootstocks short, stout; culms 60–120 cm. high, stout, the basal sheaths purplish-tinged and filamentose; leaves strongly septate-nodulose, the lower clustered, the blades 8–18 mm. wide, often 30–60 cm. long, light green, stiff; terminal spike staminate, linear, 2–3 cm. long; lateral spikes 3–6, approximate, spreading or drooping, oblong-cylindric, 3–4 cm. long, 8–12 mm. wide, densely many-flowered; scales ovate-lanceolate, rough-awned; perigynia ovoid-lanceolate, 4.5 mm. long, triangular, scarcely inflated, subcoriaceous, olive-green, strongly ribbed, obliquely short-stipitate, tapering into the strongly bidentate beak 2 mm. long, the teeth erect, stiff, 1 mm. long.

UNIVERSITY OF ILLINOIS-URBANA
3 0112 018423829